

THE AUTOMOBILE

Autoing in South America

By Sigmund Krausz

THIS is written in Rio de Janeiro in the latter part of June of the present year. I left New York, May 1, on the steamship *Gunther*, with a view of introducing an American automobile in South America. I also made up my mind to study the automobile question from all points of view, but herein I shall confine myself to report only such observations as may be of interest to the readers of *THE AUTOMOBILE* and autoists in general.

In Bridgetown, on the island of Barbados, where a short stopover was not sufficient to go deeper into the matter, I had a chance to notice that the automobile has made its appearance even in the smaller islands of the Antilles. I even read in the *Barbados Advocate* of an automobile accident which had happened a few days before my arrival, and, in the same paper, I saw an advertisement of the single-cylinder Brush, claimed to be the best on the island.

there and crossing the frightfully paved streets without danger to life and limb. Verily I believe that the appearance of an auto there would cause as much of a sensation as if the archangel Gabriel were to descend from heaven and blow the horn of resurrection. I doubt if very many Parahybanos are aware there is such a thing.

It was different in Pernambuco, my second landing place on the coast of Brazil. There are said to be 280,000 people living in this city, ten or twelve of which must surely have had more money than sense (I hope in the interest of the motor trade that none of these will ever read this copy of *THE AUTOMOBILE*), for I was told there were that many automobile owners in Pernambuco. How in the world any man, outside of a lunatic



Monroe Palace in Rio Janeiro



Street in Pernambuco



Avenue of Royal Palms, Pernambuco



Autoing in Pernambuco

Since it appears, from my information, that it has no competitors on the ground, there is no reason to doubt this assertion.

But in vain did I look about for auto tracks or gasoline and exhaust smells in Cabedello and Parahyba do Norte, the first ports of Brazil where I had a chance to spend some time ashore. Well, the first place is only a small village, but Parahyba has a population of 30,000. In spite of this fact, no jolly autoist has ever sounded his horn in Parahyba, and dogs and chickens are still living peacefully



Avenida Central in Rio Janeiro

asylum, could get the idea to buy a car for use in this city is more than I can comprehend. I had a chance, through the courtesy of one of these gentlemen (again I hope he won't read this) to take a two hours' drive in a Clement-Bayard in the streets and environs of Pernambuco, and, if I live to-day to tell the tale, it is because my stomach and intestines refused to be shaken out of me. It was lucky that I had the idea of taking a snapshot of the car mentioned as it left the courtyard of my host, for after we started I was no longer in condition to think of anything but how best to resist the jolts and shocks I received during the course of that two hours' purgatory.

Similar conditions meet the autoist in Bahia, a city of 300,000 inhabitants, some 300 miles south of Pernambuco. There I met a man who knew a man who claimed to have seen an auto in town, but whether this is really so or whether the assertion is imaginary, I was unable to ascertain. At any rate, the fact that I did not see a car in Bahia is proof positive to me that the people of this city are more endowed with gray matter or common sense than those of Pernambuco, for the pavements are certainly such as I have seen only in some of the worst streets of Constantinople. And what a delight it would otherwise be to motor in the winter months in and around Bahia amidst a luxuriant nature such as is rarely met with.

I had been told much and read much in magazine articles, consular reports, and other amusing literature about the great progress of South American republics, and especially that of the cities of Buenos Aires and Rio de Janeiro. Neither was I disappointed in the latter city, to which I proceeded from Bahia—by sea, as you may well imagine. There is not a mile of road in the country, outside the capital and Sao Paulo, that could be safely negotiated by an automobile, unless it be on a force tour to advertise a car, as was done lately by a French count, who made the trip between Rio de Janeiro and Sao Paulo, but with the resulting ruin of his car and an expenditure of several weeks' time. The distance, by the way, is less than 300 miles.

There are magnificent drives in Rio de Janeiro, of which I will speak a little later. For the moment, I want to dwell on my experiences in getting my Stoddard-Dayton out of the custom house and the necessary license for my demonstration to drive the car in Rio. I had met on the steamer the Austrian consul in this city, who gave me the cheerful information that it usually takes from two to three weeks, or even more, to clear a car from the "Alfandega," which is Portuguese for custom house, and it was not exactly with an easy heart that I looked forward to the red tape and annoying formalities of this procedure. But I have had business dealings with Latin-Americans before, and had, only lately, learned a lesson in Havana, the moral of which now proved useful to me.

I succeeded in clearing my car within 48 hours, but the hours of running, waiting, swearing, and talking in English, French, German, and with the help of an interpreter and native custom broker, in Portuguese, were agonizing. I wanted the car treated as a tourist's, or a sample car; i.e., I only wished to deposit the amount of duty in the nature of a guarantee as a safeguard for me against the possibility of re-exportation, and although samples of other goods had previously been admitted on these conditions, mine was the first case of an automobile and had, therefore, no precedent. There were long consultations with various officials, and I was sent from Pontius to Pilate, but in the end I gained my object. Not, however, without using my influential letters of introduction to the Brazilian Secretary of State, Baron de Rio Branco, and the Secretary of the Navy, Admiral de Alencar. At that, I had to put in a written and stamped petition to the custom house authorities.

But it was only now that my real troubles started. I had the Stoddard-Dayton out of the "Alfandega," but was not allowed to run it on the streets. To make the thing short, I only state that for five days I wore the stone steps of the prefecture smooth in a chase from one official to the other, all of whom were politeness personified, but always showed me some clause in an ordinance or law which forbade just the thing I wanted them to do.

At last I got my precious document and four or five documents which entitled me now to chase through the streets of the Brazilian capital with my auto. For one does not drive rationally here, one chases at a go-as-you-please speed, even in the busiest districts. The cost of these documents figure up as follows:

65	milreis (\$21.66)	for an automobile license.
65	" (21.66)	for examination of automobile.
23	" (11.00)	for examination of chauffeur.
20	" (6.66)	for chauffeur's license.

The examination of the car consisted of an official looking

down from a second story window on the automobile, which stood in the street; that of the chauffeur in making a tour around the square in front of the municipal building. Then I got my number, 872. In regard to numbers in Rio de Janeiro the stranger is easily deceived if he judges the quantity of automobiles by them. The numbers run considerably over 1,000, although there are in all only about 300 cars in the city. This is explained by the fact that the city is divided into districts, numbered from one upwards, and the first, or first and second figure of the number carried on the car denotes simply the district in which the machine is registered. Thus my number 872 meant that the owner lived in the eighth district and possessed the seventy-second car registered therein.

My newspaper connections in the United States and a letter of introduction which I carried from the Press Club of Chicago got me next to the newspapers and eight of them gave me and my car most flattering notices of welcome in Brazil, and several of them used the opportunity to write at length on the abuses I had been put to at the prefecture. They also started a campaign for the abolition of the antiquated red tape and the introduction of a system, formed after the French pattern, in regard to tourist cars and samples imported for transitory use. Much amusement was caused in the city by the clever way in which an illustrated comic weekly, in a whole colored page, brought the matter to public attention, under the title of "Adventures of a Distinguished American Guest." The automobile club, too, took a hand in the affair, and thus I am quite proud of having given the initiative to a much-needed reform.

The cars owned at present in Rio by private owners and livery garages are principally of French origin, with a sprinkling of English, German, Italian, and American cars. The styles of cars vary, but the limousine and large touring body prevail, and some fine specimens may be seen during the semi-weekly *coros* along the bay, when gaily dressed women and children fill the vehicles which are driven up and down the Avenida Beira Mar between 5 and 6 p. m., Wednesdays and Saturdays.

Of livery cars, there used to be quite a large number on the streets, but lately they have diminished considerably, on account of a police ordinance which restricted their charge, and, at present only old and somewhat dilapidated vehicles stand for hire on the street. The price per hour was formerly 15 milreis (3 milreis equal \$1) for the first and 10 milreis for subsequent hours for two persons; additional passengers, 1 milreis per person and hour. The charges now are 8 and 4 milreis, respectively, and the livery car owners claim not to be able to make a profit at these prices with decent cars in service. They rent now from their garages at the old prices and wait for a change in the police government and a return to the old rates. With that a renewed boom in the auto business is also expected. Among the livery cars on the streets I cannot omit to specially mention a curious and ridiculous looking little German runabout, called *Piccolo*; air-cooled, with two diagonally placed little 6-horsepower cylinders, all exposed, and room for only one person aside from the driver. About a dozen of these are in use, but not much in favor.

Motoring is practically confined to the city limits, and only the newly constructed avenues and streets afford pleasure. But these are really fine, and the splendid asphalt pavement of the Avenida Central, Uruguyana, Rua Florian Peixotto, and other thoroughfares, as well as the fine macadam of the Avenida Beira Mar, are unsurpassed motor roads of which any European city might be proud. And as to scenery along the latter road, I have, during my travels in many foreign lands, not seen anything to approach it. This magnificent avenue has been constructed within the last three or four years, as have been most modern improvements in Rio de Janeiro, and is, as yet, not quite finished, but the work is rapidly progressing, and within a short time the city will have, perhaps, the finest motor drive-way in the world.

Altogether, motoring in Rio, in a climate where the winter corresponds to our June in the Middle States, might be an unalloyed pleasure were it not for the unaccountable habit of

the natives to prefer the middle of the road to walking on the broad sidewalks, and to walk at that, like some automobilists, neither looking to the right nor left and without paying attention to horn signals. Only the rattling clamor of the exhaust will cause them to pay attention and jump aside immediately in front of the car with a curse at the driver. That persons are not killed and mutilated every day in the streets of Rio, is really a wonder and speaks well either for the skill or the carefulness of the chauffeurs, who must be constantly on the lookout.

Another thing which mars the pleasure of the autoing tourist, and of native autoists, too, for that matter, is the fact that the price of gasoline is almost prohibitive. A case containing two cans of less than 5 gallons each costs from 16 to 22 milreis, according to where and in what quantity you buy it. This is a severe drawback to the pleasure, and has, together with the corresponding costliness of repairs, spare parts, accessories, and other supplies, tended to retard the development of motoring and to cause many devotees to again drop the sport after having followed it for a time. The present financial crisis here is also a reason why, for the present, there is a perfect stagnation in trade and sport, and it looks as if there would be no improvement until times get better.

If I have said before that the Avenida Beira Mar offers scenically unsurpassed beauties, I want to modify this statement. I had, for the moment, forgotten, that Rio de Janeiro has in its immediate environs, in the mountains which surround the city on all sides, a driveway the like of which no other capital can boast. Within 10 minutes from the center of the city a narrow but good road winds up Tynca Mountain in hair-pin curves and spirals, leading along steep precipices, past cascades and magnificent lookouts, and always at a grade which

often reaches 16 to 18 per cent. This road runs for several miles up the Tynca, thence to the Gavia mountain and down again to the other end of the city, through virgin forest dotted only here and there with a little hut or house on the lower altitudes. Its quiet and coolness make it a favorite excursion for autoists, in spite of its dangers, to which a one-track electric tramway, taking half the width of the driveway, adds considerably. My Stoddard-Dayton performed, however, on the Tynca, a trick which very few cars here have so far accomplished. It went up as far as White's Hotel on high speed with four passengers in it.

To reach Petropolis, the summer residence of many Rio citizens and the steady abode of the diplomatic corps accredited to Brazil, is, at present, impossible, although that city is within easy motoring distance. Only one man has so far driven there under incredible difficulties, and that, like the tour to Sao Paulo, to advertise a certain French car.

I venture to say that should an auto road to Petropolis be built, as the government is said to plan, the number of automobilists in Rio de Janeiro would be doubled in no time. I have been told by the amiable president of the Club Automobil Brasileiro, Count de Almeida, an enthusiastic autoist, that the project stands a good chance of realization.

In conclusion I must say a few words of this automobile club which is the only one in Brazil. It has about 200 members, belonging to the best class, and is a well-appointed place for social purposes. Its building contains no garage, however, and serves more as a rendezvous of the motorists who come there for refreshments and a game of tennis. There is plenty of European automobile literature to be found, but of American trade papers I have seen only THE AUTOMOBILE represented.

WHAT THE R. A. C. DUST TRIALS DEMONSTRATED

LONDON, Aug. 7.—The Royal Automobile Club has concluded its dust trials, and their results and the lessons that are to be learned from them are being anxiously awaited. The trials consisted of careful experiments with numerous devices for the investigation of the dust nuisance, and occupied two days at Brooklands racing track, the first day being devoted to the adjudication of the least dust-raising manufacturers' stock cars, for which event there were 25 entries. The second day experimental contrivances were dealt with.

Steam cars, owing to the remarkable lack of dust-raising properties demonstrated by the White and Stanley cars in last year's trials, were barred from the competition proper, and ran *hors concours*. Nearly all the ocular results went to show that, with or without special devices, the dust raised at 30 miles per hour is practically double that raised at 20 miles per hour. Of the various devices, the following are interesting, as showing the various ways in which inventors have set about the dust problem. That of H. Treadwell consists of a patent exhaust suction device. Pipes fitted with four rubber bell-mouthed pieces were fitted to an injector valved off the engine exhaust. Each of these bell-mouthed pieces were carried close to the ground directly behind each wheel. By the action of the injector the dust is sucked through the pipes into a central box, from which it is deposited from time to time in small heaps on the ground. Another design was a complete undershield fitted to a Brooke car and invented by Conrad Ingleby. The shield was solid

from the front axle up to halfway under the engine, after which point it was perforated for the rest of its length. At the back of the car and just over the shield were two fans, driven from the propeller shaft, and designed to fill the partial vacuum which the passage of the car always seems to create.

Better than this, or certainly its equal, was the performance of the standard 10-horsepower Cadillac, with patent folding seat. This had no other special devices upon it whatever, and its performance was a remarkable one in every way. A 20-horsepower Decauville fitted with Drury-Medhurst tires raised only a small amount of dust. These tires have an additional rim fitted in such a way that the tires only expand longitudinally, not laterally at all, and thus have a constant and narrow tread. A 40-horsepower Napier was fitted with various tires and ran with them time after time over the course. Only the photographs will be able to show the difference in their performances. To the naked eye they were all alike.

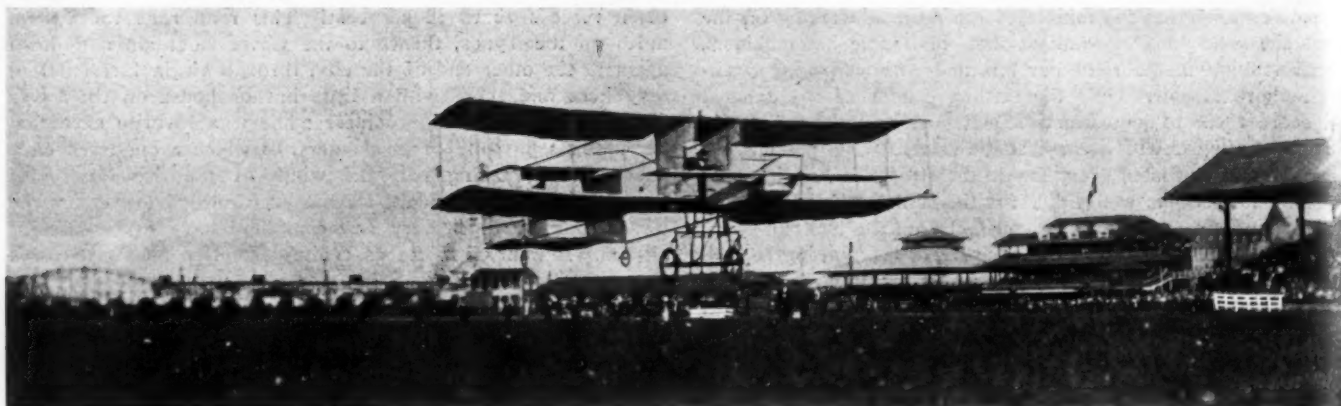
Whatever other lessons have been learned from the trials, the fact that steam cars are better than petrol ones, as far as dust is concerned, has been amply demonstrated. Throughout these trials a couple of steamers ran at frequent intervals and their performances were certainly worthy of notice. Taken on the whole, however, that of the standard Cadillac car is the most noteworthy of the whole trials, and signifies that in one respect at any rate America is ahead of England in automobile design.

SOUTHERNERS MAKE LONG TOURS.

LYNCHBURG, VA., Aug. 9.—Dr. George M. Preston, with his nieces, Misses Charlotte Clark and Jennie Strother, left recently in his 20-horsepower White steamer for a six weeks' trip in the North. They will go through Maryland and Pennsylvania to Bedford Springs, then to Albany and Niagara Falls, possibly crossing into Canada.

ANOTHER 5,000-MILE TOUR IN THE NORTH.

HUNTSVILLE, ALA., Aug. 9.—After making the record of disposing of 747 cases during the sixteen months that he has sat on the bench as Federal judge, Oscar R. Hundley left last week for the East on a well earned vacation. Judge and Mrs. Hundley will be the guests of Hon. Henry D. Eastbrook, of New York, on a 5,000-mile tour through the Northern States.



Henry Farman Making One of His Successful Flights in His Aeroplane at Brighton Beach, New York City.

FARMAN'S BACKERS HAVE BACKED OUT.

Farman and his aeroplane made their last flight in the vicinity of New York last Sunday. On two days of the preceding week the weather was unfavorable, and although the machine performed well on all the other days, business at the Brighton Beach track was far from prosperous. These developments were made public Monday, when it was discovered that the chief promoter of the exhibitions had made a sudden flight in the homeward direction of St. Louis.

T. R. MacMechen, the only member of the original syndicate remaining in New York, said that of the \$24,600 which Farman was to receive for a ninety-days' engagement in this country only about \$7,500 had been paid him. At the end of last week there was due him a week's salary of \$1,680, \$800 bonuses for flights and \$800 for expenses. Mr. Farman handed in a bill for this sum, and when the syndicate failed to produce the cash, said he considered that it had broken its contract with him. He has not yet made any announcement with regard to his plans for the future.

The trouble seems to have been that the public was not sufficiently educated in aeronautics. So many "sky pilots" have been going about the country with gas bags fitted with bicycle engines that Farman's low, swift flights, although more significant of the future, seemed comparatively tame.

Farman Has Many Offers, But—

Any number of press agents may be found around Mr. Farman's quarters at the Hotel Astor, with their routes all booked and long lists of dates made out, but when it comes to putting up the cash one and all grow suddenly bashful. Monday Mr. and Mrs. Farman went out to the Oranges and visited Edison, who, it is said, made impromptu plans for an aeroplane of his own. Another report is that Farman has offered to sell his aeroplane to the government.

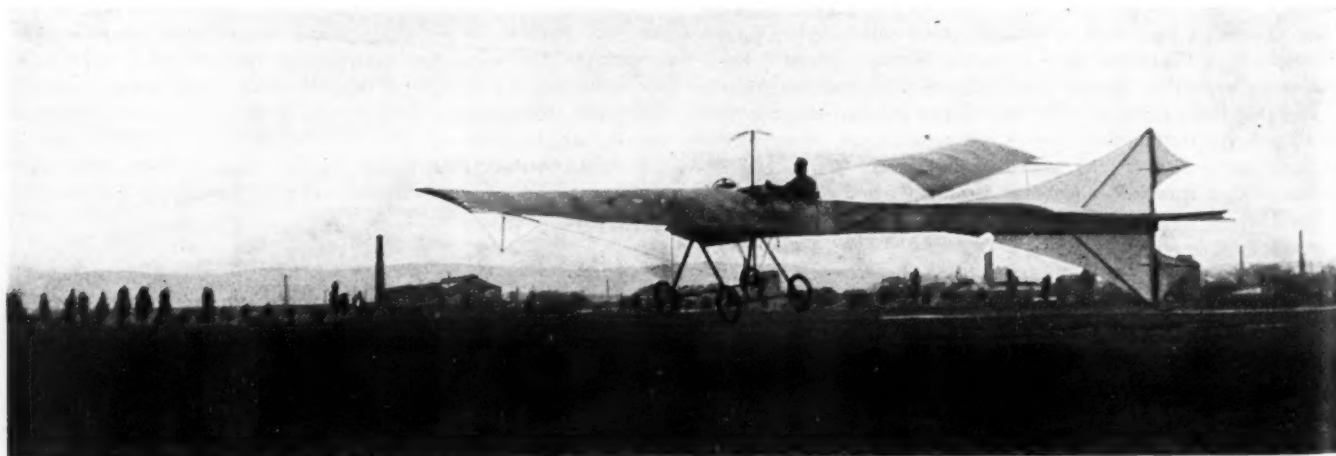
FRENCH AERONAUTS MUST RISE EARLY.

PARIS, Aug. 7.—French aeronauts and their followers must rise early if they wish to indulge in their favorite sport at Issy-les-Moulineaux, the police authorities having decided that the ground shall only be open to them from daybreak to 6 A.M. Although such an early hour has been chosen the sky pilots must have the presence of seven policemen and one sub-brigadier, at a cost of \$4 per day.

These precautionary measures are the outcome of the closing of the ground by order of the chief of police. Naturally the aeronauts protested at being deprived of the only convenient training ground in the neighborhood of Paris, and protested with such effect that Chief of Police Delpine withdrew his interdiction on the conditions mentioned. Issy being practically a portion of the City of Paris crowds in the past have been too numerous, in the opinion of the police, to render the aeronautical experiments altogether safe for the public.

WRIGHT MAKES FLIGHTS IN FRANCE.

LE MANS, Aug. 10.—The French press unites in enthusiastic praise of Wilbur Wright, the Dayton, O., aviator, and his aeroplane. The *Figaro* declares that "this decisive victory creates a revolution in the scientific world." Saturday Mr. Wright flew successfully before a number of experts and pressmen, and Monday did even better. After two false starts, he got away in good shape and covered about two kilometers in one minute and forty-three seconds, causing the machine to describe a figure eight. It is reported that a French syndicate has offered \$100,000 for the manufacturing rights for France and her colonies, provided within a reasonable time Mr. Wright makes two flights of fifty kilometers, carrying two persons. Mr. Wright is not likely to attempt to fulfil these conditions for some weeks.



Gastembide and Mengin's Monoplane, "Antoinette II," Flying at Issy-les-Moulineaux, near Paris.



CHICAGO, Aug. 6.—America's first demountable rim contest, conducted to-day by the technical committee of the Chicago Motor Club over the Chicago-Elgin-Aurora-Chicago century course, was won by the Diamond demountable, with a total of 5 min. 36 2-5 sec. for the changing and readjusting of the four rims that were changed by two workmen during the run. Second honors went to the Continental rim, mounted on a Packard roadster, 5 min. 48 sec. being required for the task. Third and fourth places were awarded to Fisk demountables, one set fitted on a Knox four-passenger roadster requiring 5 min. 49 4-5 sec. for original changes and adjustments at the end of the run; and the other set, on a Thomas-Detroit roadster, requiring 7 min. and 10 1-5 sec. for original change and final adjustment. Fifth honors were carried off by the Nadall demountable, 7 min. 35 4-5 sec. being required for the changes and tightening of three attaching shoes which had not been sufficiently tightened when the change was made. The Nadall demountables were on a Pierce six-cylinder touring car.

The object of the test was twofold, to determine first the speed of changing the different rims, four on each car; and, second, to determine the reliability of these rims as could be judged from 100 miles of traveling over dusty, gravel and stone roads at an average pace of 20 miles per hour. The technical committee of the club found it impossible, because of the absolute lack of previous contests of this nature, to take into consideration any other than these two phases of the rim contest, and its awards were based solely on these two.

The plan of the test necessitated the changing of all the rims before Elgin, 42 miles from Chicago, was reached, and the remainder of the trip was to determine if the rims, as placed on, held securely, which was decided upon by a close examination of the rims at the completion of the run, when loose nuts and creeping rims were looked for. Wherever any of these were discovered, the contestants were required to tighten the nuts, and in case of creeping rims to loosen the rim and place it in its original position, which was determined by stamping, with the center punch, the rim and felloe. The time spent in this adjustment, or tightening, at the end of the run was charged double and added to that required for changing the

four rims, the total thus obtained being the figures given above.

The quickest change on the road between Chicago and Elgin was made by the Knox-Fisk combination, changing the four rims in 3 min. 56 sec., which is an average of 59 seconds per rim—a good performance, and one which brought out well the quick detachability of the tire as well as the team work of F. J. Moffatt and W. H. Crewdson. This car would have been the winner at the completion of the run had not two of the rims, the left rear and right rear, crept during the contest, necessitating the jacking up of these wheels, loosening the nuts holding the rims and slipping the rims to their original positions. In this readjustment 31 3-5 seconds were needed for the left rear and 25 seconds for the right rear, adding in all 36 3-5 seconds to the original performance. This time, however, was doubled according to the rules, so that 1 min. 53 sec. in all was added.

The Diamond demountables, which won the contest, were attached to a heavy Isotta-Fraschini car which on the run from Chicago to Elgin got off the route and met the other contestants at Elgin. This departure from the route was sufficient to have disqualified the car, but the other contestants were willing that the Diamond crew should have a chance to do the work and agreed to allow them to make the changes at Elgin. Three of these changes were made in Elgin, and the fourth after leaving Elgin. In the original change the quickest work of the Diamond crew, consisting of William Kesner and George Brewer, was 59 2-5 seconds, made on the right front wheel. The changes of these rims averaged 78 seconds per rim. In the final examination it was discovered that four of the nuts holding these rims had loosened, one on the left rear and three on the right front. In all 12 1-5 seconds were needed to tighten these, which added 24 2-5 seconds to the time.

The Continental rims, fitted to the Packard roadster, made the first change in 1 min. 2 sec., which was the fastest of the four, the workmen, F. W. Sanford and J. Hessler, showing particularly good team work, the results of previous practice. In making the second change, one of them got ahead of the other, with the result that some of the nuts had to be loosened before the rim fitted properly, making the change 1 min. 58 1-2

seconds. The Continental averaged 79 seconds per rim for the four rims in the original change. At the completion of the run, five loose nuts were detected.

The best time made by the Southmayd-Wilcox combination, with the Fisk-Thomas-Detroit, was 54 seconds flat, 4-5 of a second above the record made on the Fisk-Knox. The average time per rim on this car was 60.4-5 seconds per rim. At the final examination, three of the rims had crept, and in readjusting these the following time was required: 29 3-5 seconds for the left front, 35 seconds for the left rear, and 28 3-5 seconds for the right rear. This added 1 min. 33 1-5 sec. to the original time which, when doubled, made 3 min. 6 2-5 sec.

The quickest change made by Paul Hoffmann and J. Vilas on the Nadall demountable was 1 min. 17 2-5 sec. The average time per rim was 93 3-4 seconds. Changes on these rims were greatly hampered by the use of a ratchet wrench which was worked back and forward, necessitating three movements of the wrench for each complete rotation of the nut. All of the other contestants used the breast wrench which operates the same as a brace-and-bit for boring holes. A further handicap was that this rim carried threaded valve covers, which had to be removed in changing each rim with the exception of one; whereas, the only other contestant to have a valve piercing the felloe was the Continental, and on these valve covers were not used. The two Fisk and Diamond used blind valves, by which is meant the valve in the case of the Fisk came out horizontally through the side of the demountable rim, and in the Diamond the valve stem was cut off flush with the rim, so that in these demountables no trouble whatever was caused by the valves. When the Nadall demountable was given its final examination it was discovered that three rims were in perfect condition and no change had been made in the fourth from the time of its attachment, but the inspection showed that three of the nuts on three expanding shoes had not been screwed up as tight as the others when the change was made, and the technical committee required these to be tightened, there being 17 seconds so consumed. When making the original changes but one tool was permitted, but the assistant used a tool tightening four of the expanders. This was in violation of the rules and the committee required them to be loosened during final examination, and time required to tighten them taken.

While the contest took into consideration only the time required to change and the reliability as indicated by 100 miles of road service, the contest brought out many interesting facts relative to the demountable rim, which is very much of an unknown quantity in America. The quick detachability and attachability comprise one factor, and the ability to withstand road work another factor. In detaching the rims the Fisk crews demonstrated with phenomenal alacrity, the No. 1 crew removing a rim in 18 seconds and the No. 5 brigade repeating this performance twice. The Diamond rims were taken off in 22, 39, 46, and 21 2-5 seconds, respectively. The Nadall rim was removed in 35, 37 2-5 and 39 seconds, respectively, the time not being taken for the removal of the first rim. The Conti-

nentials were removed in 25 3-5, 26 2-5, and 28 1-5 seconds, respectively, the time not being taken for the removal of the first rim. Time on the No. 1 Fisk-Thomas Detroit for removal were 18, 18, and 21 seconds, and on the No. 5 Fisk-Knox 24, 18 and 18 seconds, respectively.

The rules covering the test called for the following arrangement in the change of each rim, all of the contestants changing the left front rims on the same spot on the side of the road at Addison, the right rear rims on the roadside at Ontarioville, the right front in the long grass at Bloomingdale, and the right rear in the middle of the road on a street in Elgin. In making the change the car was stopped and the two workmen allowed to place a jack on the ground opposite the middle of the car, to place the rim tool on the running board and lean the rim to be attached against the car opposite the front seat. The two men stood close to the jack. Two timers with stop watches recorded the time, which was taken from the word "Go" until the rim was changed and the old rim, the jack, and the tool back in the position at the side of the car. An observer rode on each car to see that no work was done on any of the cars during the entire run, except at the changing depot.

In looking over the four makes of demountables competing it was noted that on four of them are loose nuts which are taken off and must fall on the ground or be held in the hand while the rims are being changed, whereas on the fifth, the Nadall rim, there is not a loose part that comes off except the valve cover. The Fisk rims are secured by a split expanding rim or ring of "V" cross section which is forced into an opening at one side between the wheel felloe and the demountable rim. The tightening of a set of nuts on bolts passing horizontally through the wheel felloe and the "V" ring, tighten the rim in position. In brief, it is a wedge action, the wedge forced between the inclined permanent and demountable rims by the tightening of the nuts. The Continental principle is the same, except that they use six separate wedges, which are forced between the permanent and demountable rims at one side, there being one wedge for each bolt. In removing these rims all the nuts and the majority of the wedges are taken off, although it is possible by removing half of them to slip the rim over the other half without removing them.

In the Diamond rims are a series of lugs on one side of the demountable which slip over transverse bolts through the permanent wheel felloe and a set of nuts holds the rim in position. In the Nadall rims are six shoes an inch wide and 3 inches long mounted on stems 3 inches in length, which are fitted radially at regular intervals in the wheel felloe. The periphery of these shoes is curved with a slightly shorter radius than that of the inner surface of the demountable rim and in the rim are cut arc-shaped sockets to receive the shoes. The stems of the shoes thread into a sleeve in the wheel felloe so that by tightening a nut on the end of the stem, which protrudes through the felloe between the wheel spokes, the shoe is forced into the socket in the demountable rim thereby anchoring it.

Herewith is the complete summary of the contest:

No.	Rim	Car	Weight	Left Front	Left Rear	Right Front	Right Rear	Total	Additional (Doubled)	Final Average
4	Diamond	Isotta	4,335	1:02 2-5	1:26 1-5	:59 2-5	1:45	5:12	:24 2-5	84 2-20
3	Continental	Packard	3,230	1:02	1:58 1-5	1:05 2-5	1:10 2-5	5:16	:32	87
5	Fisk	Knox	2,810	1:07 1-5	:57 2-5	:53 1-5	:58 4-5	3:56	1:53	87 9-20
1	Fisk	Thos.-Det.	3,040	1:11 3-5	:57	1:01 1-5	:54	4:03 4-5	3:06 2-5	107 11-20
2	Nadall	Pierce	3,955	2:02 2-5	1:17 2-5	1:25 2-5	1:29 4-5	6:15	1:20 4-5	113 19-20

VISITORS SHOULD RESPECT CONNECTICUT LAW.

HARTFORD, CONN., Aug. 10.—Because of the numerous complaints that have been made by members of the Connecticut Automobile Association regarding the recklessness of visiting autoists from outside the State, Secretary G. K. Dustin has written to the various clubs situated in other States near the Connecticut border, requesting that they urge upon their members the necessity for respecting the Connecticut statute, as only in this manner will it be possible to retain the present liberal measure.

PHILADELPHIA AUTOISTS JUBILANT.

PHILADELPHIA, PA., Aug. 10.—Automobilists of this city are rejoicing over the approaching completion of a thorough road to Atlantic City, on which there can be no objection to reasonable speeding. It is expected that the opening celebration will be held on Labor Day. When finished the road will be one of the finest in the State; there are few sharp curves, and most of the distance is thinly settled. The route lies through Westville, Glassboro, Clayton, Malaga, Downtown, May's Landing and Pleasantville.



PARIS, Aug. 5.—Paris was dozing; it was too early for the theaters, and, although dinner was over, there was no necessity to hurry away from the coffee. The policeman at the corner of the street pricked up his ears, looked down the dimly-lit Faubourg Poissonnière, pulled out his white baton and prepared for action; he had heard the definite note of an open exhaust. But before the baton could get into action the noisy exhaust was joined by a shrill call on a mouth trumpet, a travel-stained automobile swung into the boulevard, and pulled up sharply at the door of the *Matin*. New York-Paris was finished; the Thomas Flyer, America's champion, was victorious. The *Matin* furniture had been wrapped in dust sheets for the night. But the city lived up to its reputation by assembling a crowd at a moment's notice, and the newspaper had the champagne ready to be uncorked when Schuster, Muller, Hanson, and McAdam, the bronzed occupants of the over-freighted looking car, walked upstairs to report their arrival.

When the simple ceremony was over, for the *Matin* had apparently lost enthusiasm and made no pretence at drum beating, twilight had changed to night, and the order was given to run for Fournier's garage, the last resting place on the long journey. As the car sped down the boulevards, exhaust and trumpet vying with each other for supremacy, a policeman rushed into the roadway and yelled "Les lanternes!" Schuster sped on. One hundred yards further another arm of the law attempted to stop the car. Schuster drove straight ahead. A third and a fourth followed suit, then one bolder than the rest stepped into the roadway, displayed his baton and refused to budge.

St. Chaffray attempted to explain, but the Paris police force had no more enthusiasm for the New York-Paris victor than official French motordom. The ultimatum was lighted lanterns or the police station. McAdam was for the latter; Schuster had had enough roughing. During the hesitation the pilot, who was running ahead on a bicycle, returned, pushed a way through the crowd, mounted the running board and displayed a light.

"Allez!" and down the boulevard the car shot, to a rousing cheer from the crowd.

Having left New York at noon on Tuesday, February 12, the triumphant Thomas had occupied 169 days 2 hours in its trip of 20,000 miles across America, into Alaska, over the Pacific, across Japan, and through Asia and Europe to the French capital. It is the longest continuous run ever made by automobile, and certainly the most difficult ever undertaken.

Prince Borghese, winner of the Pekin-to-Paris race, occupied 62 days in linking the East with the West. Schuster and the Thomas did the longer trip from Vladivostok to Paris, with a car that had already undergone the rough usage of a trip across

the "States" in winter and a journey over mountainous Japan, in 69 days. For the Italian car there was a perfect gasoline supply, fairly good weather, pilots through France and into Paris, and only three men to be carried. For the American car, gasoline had often to be sought in drug stores and elsewhere, rainy weather accompanied the car, much time was lost at the customs and finding the highway from Belgium to France a detour took the car over rough paving stones, instead of the macadam highway which runs into Paris, and, in addition to driver and mechanic, two passengers were carried for the entire distance.

When the official reception took place at the *Matin* at noon on the day following the arrival, there was enough enthusiasm in the streets to keep the policemen busy all the time, but not a sign of any kind that the official automobile world had read of

the arrival of the American car. The crowds cheered, struggled for souvenirs, and elbowed one another in their endeavors to find a vacant place on the bonnet for another signature. Those who make, sell, and deal in cars shrugged their shoulders and remained sullenly at home. Nevertheless, if E. R. Thomas, Harry S. Haupt, and John E. Bowles had been in Paris they would have enjoyed thoroughly the "welcome" given by automobile France. Its scantiness told a story that would have been relished by those responsible for the American entrant in the endurance race round the globe.

George Schuster had not changed into a dress suit as he took his first meal in Paris in the fashionable Grand Hotel, for the simple reason that he did not possess one. The four men had four suits among them, and each wore one, the only extras being a few articles of lined stuff into a small grip. But it was an interesting story of hardship and adventure overcome by pluck and determination that was told in one corner of the dining hall on the night of arrival, interrupted now and again by some visitor who introduced himself as an American, and offered his congratulations as such.

Naturally the American driver was disappointed that the German car should have forged ahead on the last portion of the journey, and was as desirous of giving his explanation as the listeners were of hearing.

Schuster Tells the Story of the Race

"When we reached San Francisco," said Schuster, "the Protos was being shipped by rail from Ogden, Utah, to Seattle, the rough journey across the States having completely disabled it. We had a lead on the De Dion and the Zust, and on that account, after reaching Seattle went ahead to Valdez, in order to see for ourselves what conditions were in Alaska. It was decided to abandon the Arctic portion of the journey, orders coming that the route should be across Japan, to Vladivostok, then through Asia and Europe to Paris.

"The day I returned to Seattle I met Lieut. Koeppen at the steamship office, where I learned that he had just arrived, and was expecting his car by rail the following day. The Zust, Protos, and Thomas sailed together for Kobe, Japan, crossed the Island of Tsuruga steamed to Vladivostok, and there found the Protos rebuilding under the care of men sent out from the factory. The German spent seventeen days in Vladivostok fitting out; the American spent four; the two cars leaving on May 22, the Protos at 8 A.M., the Thomas at 11 o'clock.

"From this point there was a continual struggle for victory between the Thomas Flyer and the German Protos, the latter finally being successful, thanks to the rebuilding at Vladivostok

and also the excellent manner in which it was handled on the journey through Siberia, as it also met with many misfortunes.

"Japan was a picnic, with a few scares thrown in when the narrow, flimsy bamboo bridges had to be crossed, and some strenuous calls for the low gear on the mountain passages. Nevertheless, the kindly hospitality of the natives caused forgetfulness of all the difficulties, leaving only the memory of the good time spent in crossing the land of the little brown man.

"The trouble began when Vladivostok was left behind. The roads were not any worse than in America, but when at home we could always count on food and a clean hotel at the end of a journey. In Manchuria and Siberia there was neither, the hotels being bug-ridden hovels that made one glad to sleep on the veranda, in stables, in wagons, on the ground; anywhere, in fact, but under the roof of a house. Food was as bad, the staple article of diet apparently being a coarse black bread, the crust of which could be eaten, but the inside of which was absolutely indigestible. Eggs could be obtained sometimes, tea always, coffee never.

"Rain accompanied us when we left Vladivostok and remained with us for eighteen days in succession. At that time we had not taken to the railroad track, but were endeavoring to push along over the soft, boggy country. On the first day we covered twelve miles, the second about the same distance, and the third a little less. Before we were many miles out of town we overtook the Protos, stuck in the mud, pulled them out by means of a tow line, and left them.

"After three days' traveling we reached Nikolsk, went on the railroad track—although permission had not then been accorded—but when 100 versts further on stripped our bevel gear and had to lie up for repairs. The Protos, coming along slower, received our permit for traveling on the track, and in this way saved itself a long grind through the mud. There were places where traveling on the railroad was good; there were other spots where it was so shaky that I thought my teeth would drop out of my head. The ties were not sunk, but each one raised a considerable distance out of the ground and just wide enough apart for the wheels to drop in between them with a thud and be pulled out again with a jerk. Our first accident happened on a curve where the ties were just sufficiently close together to allow both front and back wheels to drop in together and remain locked. In the fearful wrench which the car received the bevel gear stripped.

"There were some narrow escapes with trains, and at one time the withdrawal of permission to use the track, owing to the Protos having held up the express for four hours. After passing Kharbin, in Manchuria, where we left all the clothes excepting those we stood in, with orders that they should be shipped to Paris, we had some rough traveling, during which we stripped the second speed gear. A spare was telegraphed for, and I went back to Kharbin to get it. It failed to arrive, and I returned to the car to find that in the meantime Muller had put in a couple of stumps to replace the missing teeth. With this makeshift repair we continued, after ordering the spare part to be shipped ahead to Omsk.

"Later our repair broke down, and in order to get the spare part I had to travel 658 versts by relays of teams, a journey that was done in four days by changing teams every 90 versts. There was a reason for the hurry, the Protos then being in our rear, but rapidly drawing up. I wished to get back and make the repair before they caught us, but was not able to do it, the car passing me when I was within but a few miles of the end of the return journey. I reached the car at 1 o'clock in the afternoon; at 4 o'clock we were away again.

"At Moscow we were held up for one day by repairs to the clutch shaft, and again after leaving Berlin lost some hours doing the same repair work."

"And how did the motor stand it?" inquired one of the listeners.

A smile spread over the face of the driver as he replied, with justifiable pride: "Perfectly; we dismantled it at Chicago, in order to verify the main bearings, put in a new set of spark

plugs that somebody gave us, and have not touched anything since. Even the spark plugs are there, as good as on the day they left Chicago, and that is saying a great deal."

"How were supplies of gasoline and oil arranged for you?"

"There was supposed to be a complete train of gasoline stations across Siberia," replied Schuster, "the arrangements being in the hands of the person who supplied the Pekin-Paris contestants last year. Unfortunately they were not perfect this time, the gasoline sometimes being there and sometimes being entirely absent. When the supply failed, it was our business to search round town until we could find any; not being certain of the next stage, we frequently filled the tank of the car and carried a reserve supply with us in large bottles, each man holding a bottle on his lap, there being no room for it on the floor.

"Right from Vladivostok to Moscow the order was to push ahead as fast as possible. We had no need for lanterns, for a gray light lasted until 11 o'clock at night, and it was daybreak again at 3 o'clock. When Nijni-Novgorod was reached our difficulties practically ended, for we struck roads that in comparison were so good that we imagined we were on feather beds. We had to pay duty entering Germany, and on leaving the country had to visit three different towns before the amount was returned to us. Ten minutes after we got it we had to hand it out to the Belgian authorities, from whom we were reimbursed on the first request. Finally, entering France on our last day's run from Liege, 1,113 francs had again to be deposited as duty on the car. Getting near Paris we missed the road, and, instead of the macadam highway, had to travel for a considerable distance over rough granite *pavé*, that cut down our speed considerably. Though there were so many roads to Paris, nobody on the route appeared to know which was the good one."

"How were you treated along the way?"

"Well, there was no hostility anywhere, if one can regard the attacks of insects as non-hostile. We have all a lively remembrance of the thousands of creepers that attacked us in some of the Siberian hotels, where cleanliness was an unknown quantity. In one German town the landlord of the hotel looked us over when we asked for a dinner, then led us away to the servants' quarters. We forthwith removed over to the rival establishment on the other side of the street and were royally received."

"What about Alaska?" queried somebody.

"Time to think about that when airships are perfected," exclaimed Captain Hanson.

"There was as much hardship on this trip as any of us desired," exclaimed Schuster. "At times I doubted whether any car would get through. Now that we have finished, we are glad that we have got first place for America. We have been running on three hours' sleep per night for so long and have had so little acquaintance with real beds for the last four months that I doubt if we shall be able to sleep to-night. I suppose there is a bath upstairs and we will try what hot water and clean sheets can do, anyway."

"Good-night!"



This Picture Was Taken After Arrival in Paris.

CONCERNING THE ELEVENTH YEAR AUTOMOBILES

BY THOS. J. FAY, PRESIDENT SOCIETY OF AUTOMOBILE ENGINEERS.

IT has been freely predicted all along that as the result of improved methods of construction, much cheaper materials and well-developed factory organizations working on a large scale, it would be possible to produce a good automobile to sell at a fraction of the prices which obtained a few years ago and also be able to turn out a vehicle that would be superior in every respect to the cars of that time. In 1905, not to go any further back, that day seemed to lie in the indefinite future, but now, in view of the announcement of a number of makers who have already laid their plans bare for the coming year, it appears to be close at hand, if indeed, it is not already here.

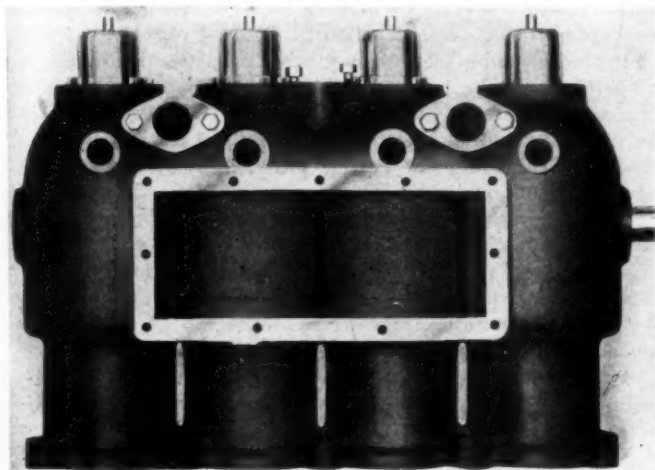


Fig. 1—Block Casting of the Chalmers-New-Detroit Motor.

To truly appreciate the situation as it will obtain for 1909, it will be necessary to go back a pace and review the history of the industry. In the early days inventors were struggling with the problem, just as inventors invariably do, in secret and in dread, fearing on the one hand the invention would not work, while on the other hand their secretiveness was enough to keep honest capital "in the next county." These were the days of original ideas, freakish designs, doings in a small way, and a conglomeration of the good and the bad. Times change, and, with time, things change. The next step in the chain of events was most conspicuous for the selection of the good points from the 57 varieties.

If it is true that the cars of the eleventh year will be generally superior to the cars of the past, it is also true that the reasons should be no secret. A secret is an embryo idea, as a rule, while the cars of the eleventh year are cars; in fact, they can be seen on the road, and there are thousands of them being constructed at the present time.

That the purchase price of these cars will be low, quite as low as the author has had the temerity to intimate, it can be adequately substantiated by merely citing a few instances in crystalline form of some of the 1909 models:

E-M-F	30-horsepower.....	\$1,200
Cadillac	30-horsepower.....	1,400
Kisselkar	30-horsepower.....	1,500
Chalmers-Detroit	30-horsepower.....	1,500
Overland	30-horsepower.....	1,500
Rambler	30-horsepower.....	1,900
Jackson	35-horsepower.....	2,000
Mitchell	35-horsepower.....	2,000
Selden	30-horsepower.....	2,000

This list is not intended to convey the impression that there are no other cars in the class. As the author is able to pay attention to the other cars, he will take them up, with a view to displaying their merits. Nor is it intended to overlook the existence of the larger and more expensive cars, or that

great improvements have been made in them. It is well known that they represent far greater value for the price than ever before. The gist of the present discussion takes into account the cars at the lower prices only.

In What Are the New Cars Conspicuous?

First and foremost, the new cars are conspicuous for the entire absence of elaborate body work. We can no longer expect to see a \$1,200 body on a car costing no more. But the new body work is neat and strong, and its comfort is by way of a fact rather than as a theory. In body work the idea of aluminum in fancy shapes and in fantastic configuration, backed up by a thick lining of plaster-of-Paris, that the whole may be stronger, will no longer obtain. Plain, straight work affords strength, with grace and lightness besides. It is not that aluminum may not find a place in the simplified bodies of the cars in question, for aluminum there will be when this product will best serve the ends to be sought. Body work in the simple form it has assumed, in this same age of the automobile, is free from the contortions to which aluminum so adequately lent itself. The idea that the aluminum bodies were lighter than those made otherwise has long since been exploded. The cost of the body and the cost of keeping it in presentable form will be but a small part of what it has been. In the past the body was the important part, important because it was the only part, perhaps, that many of the patrons could pass judgment upon, and it is no stretch of the imagination to observe that the "seventeen rubs of varnish" had a lot to do with the acceptability of the whole. Time tells the tale, and time, in this case, tells the user that what he needs is good machinery, plain body work, and, above all, a power plant that will survive strenuous service. What has experience taught?

Once designers are convinced of the genuineness of the conclusion that self-contained power plants constitute all to be desired, it does not take them long to put their conclusions into practice. Users of cars can choose for themselves as to the details more nearly according with their ideals, but the same users will probably decide that the

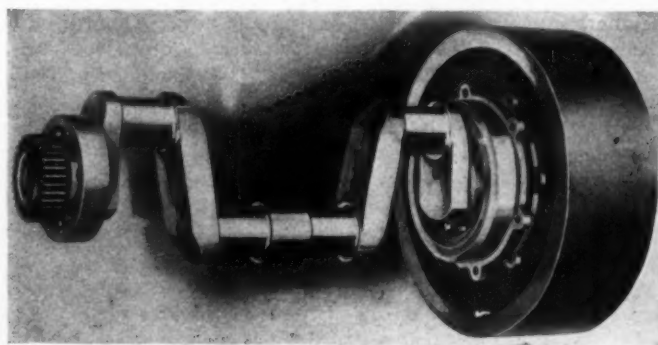


Fig. 2—Chalmers Two-Bearing Crankshaft Complete.

chassis frame of an automobile is too unstable as a platform on which to erect the machinery in subdivided units, if there must be any interrelation. There are two plans in advancing the idea of doing away with the chassis frame as the connecting member between related parts of a unit, or as between units that must work in unison. If alignment is essential to the good of the whole, that alignment cannot be fairly expected if the chassis frame is to be responsible for it.

In the earlier work it was the chassis frame that was depended upon to insure alignment between the motor and the transmission. When it was found that reliance could not be placed upon the frame, designers sought other means, such

as the self-contained power plant and the transmission axle. Both of these methods give assurance of the fact that the chassis frame will not render the machinery *hors de combat* should a sag follow a little hard usage. A sag in the chassis frame is a natural sequence of the use of the car in almost every instance, because until the sag does take place the metal is not in a state of tension. If this condition of tension were not to be anticipated, there would be no need of a frame; at all events, so much frame as is our wont to provide for an automobile under prevailing conditions of design.

No matter how great the section of a beam or a member of any sort, if it is loaded, however small the load, the result is a deflection. In the modern self-contained scheme of construction, there are no related parts that can suffer as a result of deflections because there are no

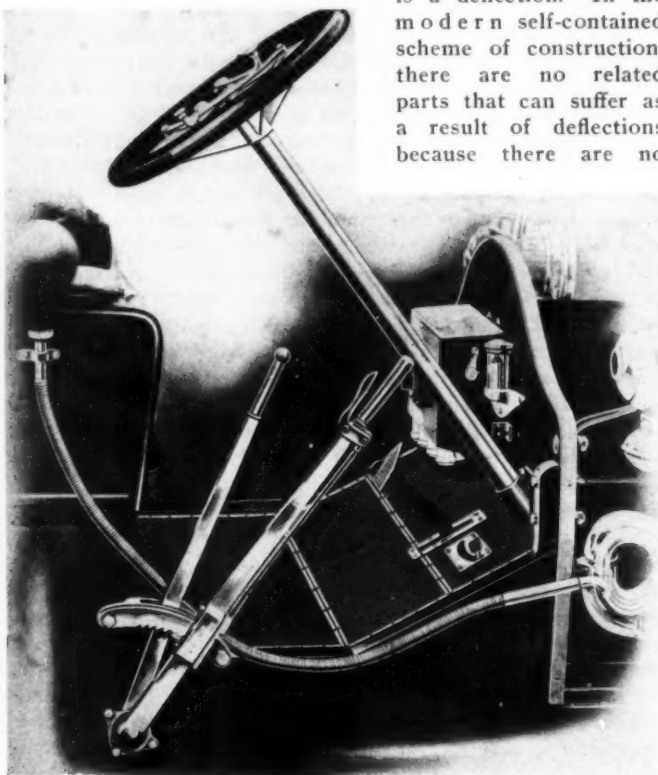


Fig. 3—Simplicity of the Chalmers-Detroit Control.

members intervening that (a) are of any notable length; (b) that would have to be used of such light section as a chassis frame; (c) that are subjected to the strains incident to road conditions.

As before stated, no matter what the section or the material, or no matter how small the load, a deflection will obtain. If this is so, how necessary it is then to be sure of a definite limit to the causes of the deflection and that the length of the member be, say, 10 inches, instead of 100 inches?

Obviously the self-contained construction is the form that renders it possible to avoid the greater of the two deflections. If it is possible to get on at all with the greater tendency—and it seems to be—what a gap lies between trouble and the man who puts his money in a self-contained plant from this point of view. There are so many ways of courting trouble that it is not necessary to find it by way of considerable deflections in a long beam. The repair man cannot fix a chassis frame that sags. He may charge for attempting to accomplish the task, but it is the same frame in the same car with the same fundamental difficulty ever present, awaiting the moment when it will assert itself.

Modern Construction Less Expensive.

Fortunately, the modern construction is less expensive to evolve than the way we were taught by the "foreign contingent," whom we must hold responsible for the "distributed components of cars." Even in the matter of repair parts, the policy is one sure to advance the industry as a whole by

leaps and by bounds. Ford, for instance, will sell all the parts that go to make a car at the price of the complete car. Who can find in this any sign of the old adage that "In repair work we have legitimate prey." That the Ford is not an isolated case is evident from the following:

Fig. 1 shows the four cylinders *en bloc*, as put out by the Chalmers Detroit Company. The set argument against this method of cylinder construction is that the four cylinders *en bloc* are very costly, and if something happens to one of them four must be purchased to make the replacement. But in this case the four cylinders will be replaced for the sum of \$35—less than half the cost of a single cylinder in a well known foreign car. Who would refuse to have all the cylinders of his motor replaced at less than half the cost of replacing one?

Of the details of construction of the cars of the eleventh years space will not admit of the mention of more than a few. It is understood that no mention will be made of old and well-known methods, except in the light of new applications.

Fig. 2 illustrates a crankshaft with only two bearings, the motor being of the four-cylinder type. Usually such motors have at least three bearings and many of them have five. At the first jump out of the box many will say: "It is wrong." Obviously, we could not get on with one bearing, but fortunately it is not necessary to try, nor could we do with two, unless the length of the crankshaft be short enough to bring its deflections within the limit experience shows will be safe. As said before, the deflection (considering the crankshaft as an abstract beam) is in proportion to the cube of the length. Let us see what this means in a comparison of two motors, the one of to-day and the other of but a short while ago.

In the modern motor with two bearings the distance between them will be, say, 23 inches. Let us assume also that the strain will be proportional to the square of the diameter of the cylinders, and that in the modern motor the bore of the cylinders (for the same power) will be 64 per cent. of the bore of the cylinders of two or three years ago.

Let us say that in the earlier motors the distances between bearings was 20 inches. Now, let us make a rough comparison, thus:

In the three-bearing motors:

The strain $s = 100^2 = 10,000$.

In the two-bearing motors:

The strain $s = 10,000 \times .64 = 6,400$.

In the three-bearing motors:

The cube of the length = 8,000.

In the two-bearing motors:

The cube of the length = 12,167.

In the three-bearing motors:

Factor of deflection = 80,000,000.

In the two-bearing motors:

Factor of deflection = 77,828,800.

In other words, the two-bearing crankshafts of to-day are not required to work as hard as were the three-bearing motor crankshafts of yesterday. But that is not the whole story; the three-bearing crankshafts did work, notwithstanding the inferior nature of the steel then in common use. The steel of to-day is very much superior to that of a short time ago; that is, the steel that an automobile engineer will contemplate using in a product of any consequence at all. Thus the steel is better and the strain is less. The method of approximating the results is simplified in order that the non-technical will be more likely to understand the nature of the problem and the accuracy of the conclusions. The idea is not to convey the impression that only two bearings should be used in every case, or that it is a crime to use three. What we wish to show is that hasty conclusions are out of place in a matter of this sort and that time renders matters clear. It is proper to add, however, that it is a decided advantage to have a short motor, because then something besides the motor can find space in a car of a length capable of maneuvering on an ordinary roadway.

The main point to be made is this: Are the cars at the

low prices to be inferior to the cars of the past costing double or even treble the price of the new product? How shall this question be answered. Refer to Fig. 3 and observe if the space is cramped, if the scheme is not clean cut, and compare this with other products of the past to determine if there has been any retrogression.

Fig. 4 shows the details of the steering gear and its related parts; note the depth of the front end of the side frame; see the wealth of bearing surface provided for the steering members; observe that the means for oiling are adequate.

Fig. 5 shows a car upside down. What product in the past exhibited a cleaner bottom? Wherein lies the retrogression? The author fails to note even a tendency; indeed, may we not say this tendency is in the direction of improvement?

It may be said the new cars are smaller, but with the present short motors and a wheelbase of, say, 110 inches, it is a question if the new product will not afford more available space. It was not by curtailing then that the new product was rendered low priced. Suspicion is prone to run rampant, and it follows that all courses of cost reduction must be explored ere the situation can be accepted without a struggle. Did they reduce the sizes of the wheels? In many instances the sizes were actually increased over the practice of the past, and in no cases are the tires below the sizes recommended by the tiremakers.

The man who has to pay for the tires, however, never would have arrived at the right conclusion, since the man who sees through a dollar is as blind as a bat. It is the man who gets his line of vision on another man's dollar that can tell how big the tires ought to be, and even he may fall short of nerve equal to the occasion. At all events, the low cost of the product to be placed before the 1909 public was not rendered low by stinting the tires, which is more than can be said for some of the cars of the past.

If the cars are big and roomy, if the work bears all the earmarks of a high standard, if there has been no retrogression in the matter of style and finish, since the price is so low, there are those who will say: "The materials must be very bad, indeed."

How About the Quality of the Materials?

Actually the materials will be better, far better than they ever were before, no matter what the price of the automobile, and for the same reason that the price of the automobile can be lowered. The most inferior materials of to-day,

entering into automobile work, are superior to the best to be had but a few short years ago. What we have to-day are not high-priced special products to be used sparingly in a few spots to give the press agent a chance at his stock phrases. We have to-day a good average product, the worst of which is not so high-priced as to require a nerve tonic with every pound purchased. In the earlier days, engineers relied upon the vendors of the steel, and sometimes they were safe in doing so, but the occasions when they failed to get the right material were frequent enough to keep them in hot water almost constantly. Then the purchasing agents of the automobile companies were not skilled in the matter of the quality of steel, and to them price was the whole story. Bessemer steel was very low in price, and Bessemer was what they "landed" every time.

The Present Plan of Building.

To-day the situation is quite different in that the makers of cars pay quite as much attention to the quality of the material as the occasion requires, but they pay more attention to the question of where to put the several grades of available product. The proper way to put it, then, is to say "appropriate materials" are the order of the day.

Referring to materials, it is not at present the idea to start with highly resistant materials (normally highly resistant), for such products are over costly; moreover, they resist

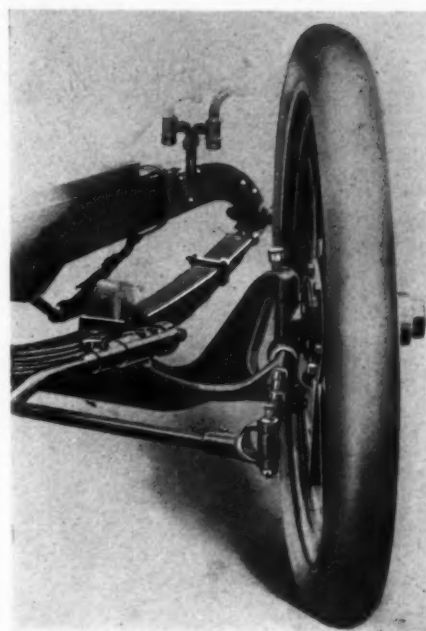


Fig. 4—Suspension, Front Axle and Steering Knuckle Assembly.

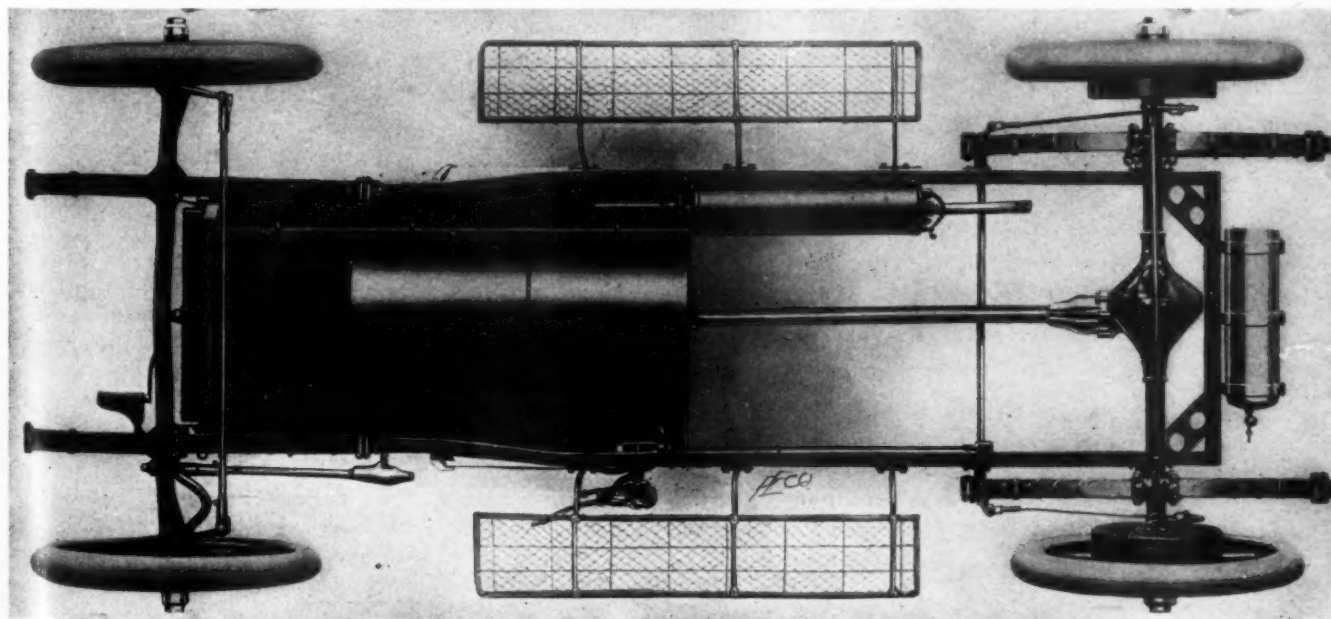


Fig. 5—Clean Lines of the Underbody of the Modern Low-priced Unit Construction Type of Automobile.

machining with a tenacity that is scarcely equalled by their after performance. The current idea, which is the idea that will survive for 1909, takes into account the fact that certain materials are capable of being rendered hard or soft, dynamic or ductile, or both, and initially the same materials are soft enough to machine. These materials when fashioned into the desired shape, leaving a few thousandths to permit grinding, are then ready for the heat treating process through which they are rendered fit. In the normal state, the steel may not show such good qualities as one would want, while

in the finished state the parts will exhibit just the characteristics most desirable in view of the duties of the parts.

Take crankshafts, for illustration; they are costly when they are "slabbed," and it is true the slabbing process cuts the lay of the fiber, leaving less than would be desirable in the finished product. To get away from the cost and the defect, the shafts are die-forged of relatively soft material, by a process such as will not bruise the steel or otherwise leave it in such shape that the after heat-treatment will be futile. The die-forgings thus made are easy to fashion into shape

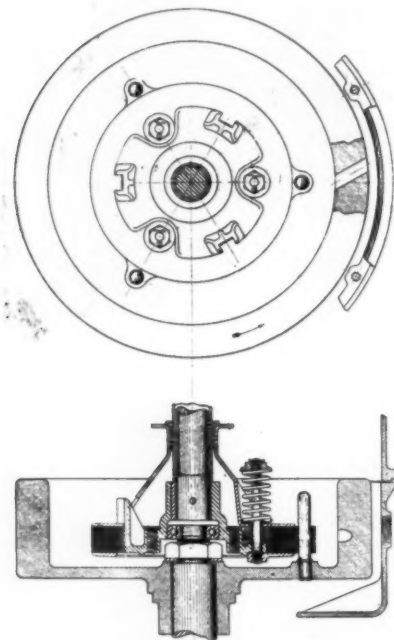


Fig. 6—Plan and Section, Chalmers-Detroit Multiple-Disc Clutch.

ready for the grinder, which device takes off the final thousandths. Before grinding, the shafts are heat-treated, to render them rigid and dynamic, qualities needed in crankshafts.

Now, there is no known material of a greater modulus of elasticity than the material used in this work. It follows that there is no material that will permit of the use of less, since the torsional angle will be the minimum in the shafts as made. If the torsional angle is thus a minimum, it is fair to infer that the deflections on the whole will be as low as possible. If this is so, the mean of dynamic ability will be in the shafts as made, yet it is the purpose of the heat treating process to accentuate this one property to the greatest possible extent. Crankshafts thus made cost probably one-third of the cost of the crankshafts of the more resistant alloy steel, and so it may be said the cost of the replacement will be very low in comparison. Even so, it does not of necessity follow that the breakages will be more for the initially soft material, because, as before stated, the modulus of elasticity is the maximum possible of attainment in the materials used. It is desirable to be able to replace a crankshaft at small cost, and it cannot be said that the present plan is merely cheap at the expense of merit. What is true of crankshafts is equally true of the other parts.

It is desirable to note the absence of castings in the parts that can well be of die-forgings, showing that the cost of dies is a matter of no moment, now that cars are turned out in large quantities. When cars were built in small numbers, the die problem was uppermost, and resort was had to castings to sidestep the cost. Most of the cars are provided with transmissions with three speeds and reverse, using the sliding gear principle, which, in spite of its mechanical incongruity, seems to be the best all around method. The gears are of ample proportions, and the materials are usually alloy steel.

In the cars in question, it is agreeable to note that the wheels are better than they ever were before, with better proportions of the spokes, and hubs that are more dependable. The question of bearings is one that has settled down to well and favorably known types of ball and roller-bearings, with never a thought of going back to the earlier types of plain bearings. Of the ball-bearings, the annular has the call, whereas the roller-bearings are largely of the Timken and Hyatt types now so largely specified in automobile work.

In the cars for 1909, the magneto is looked upon as finality as the device for the ignition. There are, of course, several makes of magnetos, each of which have their adherents. Magnetos are not provided in every case, except as an extra. Purchasers can best settle for themselves, if they will buy the cars with magneto at the regular price, or if they will select the other cars and pay extra for the magneto. The author thinks they should adopt the magneto even as an extra.

The clutch question in the new cars is more secure than it ever was before, and while all are not multiple disc types, all are far more reliable than they were. Fig. 6 illustrates clutch simplicity, and there are few of us who will fail to remember the complex schemes of the past. It is a source of much delight to observe that the new crop of clutches are primarily strong, yet withal simple in extreme. The clutch illustrated is of the multiple disc genus, of bronze and steel alternately, with the discs of considerable number, and enough of them to do the work without showing wear. In this case, instead of the clutch being housed in, the whole flywheel with the clutch are in an oil-tight housing and the oil is distributed to the clutch by the flywheel.

Brakes, fortunately, are well thought out in all the cars of the future, but special mention is due to those of the builders who avoid the use of facings that will not stand the heat and wear. The "Thermoid" idea is taking hold of such builders as will pay the price, and, in view of the heat-resisting ability of such materials in view of their high coefficient of friction, the brakes should cease to be a source of annoyance, as they were so prone to be in the past, a point which indicates that the new cars are not of low quality as a result of low price.

In conclusion, it may be said that the whole undercurrent of this article is to convey the impression that the cars of the eleventh year generally are the best cars that the builders ever turned out, and are turning out in large quantities, in order that the price will be very much lower than it ever was before. Later on the idea will be to discuss in detail the parts of the several cars, with the idea of showing in what manner they are entitled to the confidence of present and prospective purchasers of the eleventh-year automobiles.

LARGER PNEUMATICS MEAN MORE MILEAGE.

Experienced motorists know that a tire a size larger than that required, according to the "recommended weight" which a tire should support, will carry him from three to five times as far as the tire with which his car would ordinarily be equipped, says the *Rambler Magazine*. There are several reasons for this: The "recommended weight" of the manufacturer is the weight which that tire can carry without overloading it or subjecting it to destructive strain. Any increase over that "recommended weight" means trouble a short ways ahead. It means the same as a steam boiler made to withstand 200 pounds pressure to the square inch being run continuously at a pressure of 250 pounds or more. The result in either case is quick destruction—trouble—expense.

Take for example a 30 by 4 tire. The "recommended weight" is 550 pounds per wheel or 2,200 pounds per car, which is figured to include the normal load which that car should carry. Thus, a 2,200-pound car containing five people weighing 150 pounds each (the normal load) would put every pound of weight on a 30 by 4 tire which it can carry without overstrain. It is then carrying every ounce it should up to the limits of safety. It is a boiler tested to 200 pounds with 200 pounds of steam up.

ADVANCE IN AERONAUTICAL MOTOR BUILDING

By W. F. BRADLEY.

PARIS, Aug. 5.—While it is the automobile that has made aerial navigation possible, the flying machine is seeking to repay its debt by providing us with lightweight motors. Steam as a motive power for flying machines has too many disadvantages to have ever been proposed; electricity has been used, but owing to the excessive weight of storage batteries and dynamo, has never been found really practical, and now that the internal combustion engine has reached such a degree of perfection is no longer a serious rival.

The defect of the automobile engine, the lightest of all power plants available, is its weight. Built for the road or

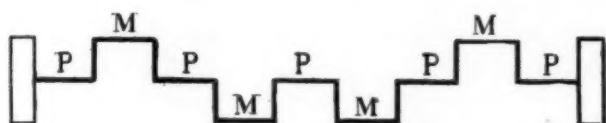


Fig. 1—Arrangement of Four-Throw Crankshaft for Antoinette Eight-Cylinder Engine.

for marine work, a few pounds additional weight were of very little importance; it was only when flying machines began to force their attention upon us that the necessity and possibility of reducing weight were realized.

In France, where more experimental work in connection with aeronautics is being carried on than in any other country in the world, automobile manufacturers have realized the necessity of lightweight engines for flying machines and gliding boats, and in the belief that aerial navigation is destined to become a serious factor, have produced special gasoline engines to meet this demand. It is certain that experimental work in this direction will have its effect on the automobile of the future, and that the engine in general use a few years hence will be considerably lighter for a given horsepower than is generally thought possible to-day.

To reduce weight in an internal combustion engine the best method is to increase the number of cylinders. It may seem paradoxical at first sight, but it is nevertheless true, as is proved by the fact that of the seven or eight types of engine in use for aeronautical work all but one have more than four cylinders. Levavasseur, the designer and builder of the now well-known Antoinette engine, did most of the early experimental work with multiple-cylinder engines, and now stands forth as the most prominent of the small group of engineers building specially for aeronautical work. It was some five or six years ago that Levavasseur, then occupied with aeronautical experiments, sought a lightweight engine on the French market and found none. He designed and built an engine according to his own ideas, attempted to interest the public and the government, was ridiculed by both, and in order to attract attention to his product turned for a time to motor boat racing, where his lightweight engine gained world's records. Now he is back to the air.

The smallest Antoinette engine is made with eight cylinders; the largest with 24, this latter being practically a group of three eights. By adopting eight cylinders as the minimum for aeronautical work, Levavasseur was able to discard the cumbersome and weighty flywheel hitherto considered indispensable on a gasoline engine, and by reason of the more even torque to make a reduction in weight that had not previously been attempted. The abolition of the carbureter, a distinctive feature on the Antoinette, can hardly be considered as an anti-weight device, the pump and direct injection arrangement doubtless being but little less weighty than a specially designed carbureter. In design, therefore, the Antoinette only differs from the engines already used for automobile work by the number of cylinders and the absence

of a flywheel. In constructive methods, however, there is a decided difference, every part showing signs of the desire to save weight wherever this could possibly be accomplished.

The eight steel cylinders, with copper water jackets and aluminum heads, are mounted in V on an aluminum crankcase having the form of a triangular prism. Exhaust valves, on the inside of the V, are mechanically operated, while the automatic inlet valves are in the head. It is worthy of note that of all the aeronautical engines of any importance the Antoinette is the only one that is water cooled. Though the air-cooled variety is first in point of numbers, the Antoinette water-cooled type has the position of honor in success achieved, being used by both Henry Farman and Léon Delagrangé in all their record-breaking flights. Between the Antoinette and the water-jacketed cylinder-familiar to automobilists there is an enormous difference, the former being but a thin steel cylinder bearing a still thinner copper jacket, having all its parts machined to a thousandth part of a millimeter wherever the metal is not necessary for strength. Connecting rods and crankshaft, like the pistons, are of steel, and are bored out to reduce weight. The crankshaft has four throws arranged at an angle of 180 degrees, the two end ones and the two center ones being in the same plane; there are thus two connecting rods to each throw. The shaft has the further advantage of possessing a bearing between each throw. In the matter of lubrication the distinctive feature is the use of a gear-driven pump drawing the oil from the base of the crank chamber and driving it through a copper tube within the upper portion of the crankcase and pierced with numerous holes through which the lubricant is squirted with considerable force onto the moving parts below. To provide for a supply of oil in whatever position the engine may be placed—a state of affairs which must be considered in aeronautics—the crankcase is divided transversely into four compartments. Thus splash and force feed are constantly provided.

The distinctive feature, however, of the Antoinette, apart from the remarkably fine machining which its construction entails, is the absence of a carbureter. Gasoline is drawn from the tank and by means of a gear-driven pump is injected direct into each cylinder. The pump, driven off the camshaft gear, is so constructed that the stroke can be varied at will, thus regulating the amount of fuel sent through to the

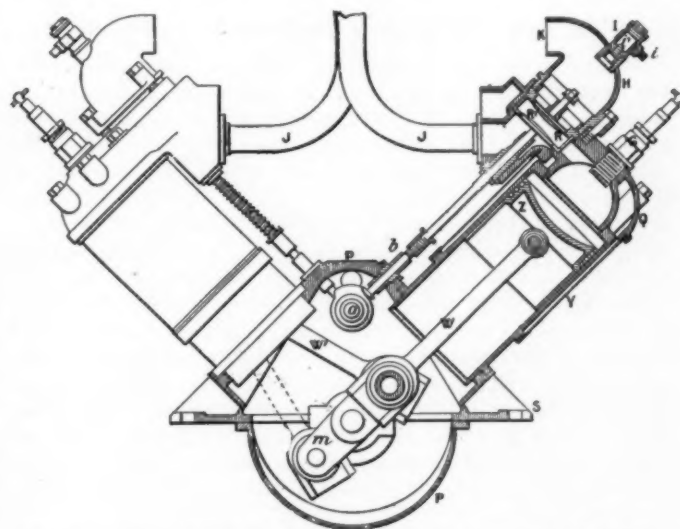


Fig. 2—Section of Antoinette Eight-Cylinder Aeronautical Engine, Z Piston; R Automatic Inlet Valve; R1 Mechanical Exhaust Valve; K Air Inlet; J Exhaust Manifold; A Camshaft; Y Copper Water Jacket.

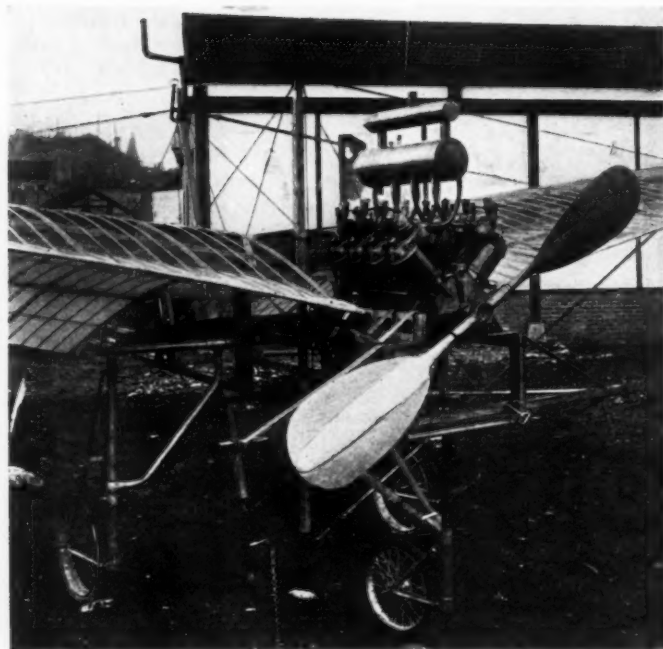


Fig. 3—Fifty-Horsepower Eight-Cylinder Antoinette Engine Mounted on Aeroplane to Drive Two-Bladed Propeller as Shown.

cylinders. Each cylinder carries its own distributor regulating the amount of gasoline necessary for each explosion and storing it during the three strokes other than that of aspiration. Levavasseur is of opinion that direct injection is the only possible method of obtaining an even distribution of the charge on a multiple cylinder engine. Ignition presents no distinctive features, storage batteries and single trembler coil generally being employed, but high-tension magneto being fitted where desired.

The eight-cylinder 50-horsepower engine, with a bore and stroke of four inches, weighs complete 154 pounds, the 80-horsepower engine weighs 350 pounds, and the 120-horsepower model scales 440 pounds. The 80 and 120-horsepower models are 16-cylinder engines. Generally for aeroplane work no radiator is used, a small tank being carried on the top of the apparatus and connected with the engine by means of suitable piping. Now, however, that the sky pilots have made progress and can stay aloft for more than a quarter of an hour, a radiator has been designed and fitted to both Farman's and Delagrangé's machines. For the eight-cylinder engine the radiator weighs but 20 pounds.

Big Auto Constructors Studying Aero Engines.

Renault is the first of the large European firms of automobile constructors to produce a lightweight aeronautical engine. Excepting that the cylinders are air-cooled, the general arrangement of the engine is similar to that of the Antoinette just described, and consequently has nothing in common with the well-known Renault car engine. All valves are mechanically operated by a single camshaft, the exhaust valves being overhead and operated by rocker arms, and the inlets below. The spark plugs are fitted just over the inlet valves and project into the angle formed by the two rows of cylinders. The carbureter and all ignition wiring is also brought up into this angle, the motor thus having a remarkably clean-cut appearance. Naturally the flywheel has been abolished, and as in the Antoinette there are two connecting rods to each throw of the crankshaft. Only one model of engine has yet been produced, which with a bore of 3.5 inches and a stroke of 4.7 is rated at 45 horsepower at 1,500 revolutions per minute.

Distinctive in the Renault cooling arrangement is the use of two large ventilators, the one at the forward end of the engine drawing in cool air and the one at the rear driving it

out after it has passed around all the cylinders. As the engine is covered by a sheet-metal hood, and the fans themselves revolve in a light cage, the current of air is considerable and is declared to be sufficient to keep the engine cool under the most disadvantageous conditions. In principle the ignition and carburation have not been radically changed from those used on the touring cars. Naturally, lighter material is employed wherever possible, but the design is the same. The Bosch magneto is mounted in a reverse position under the forward extension of the crankshaft, the carbureter is carried centrally between the two rows of cylinders and lubrication is assured by a force feed pump similar to that on the cars. Fully complete with carbureter and all ignition apparatus the Renault engine is declared to weigh 310 pounds. No public tests of the Renault engine have yet been made, though one is fitted to a new aeroplane being built by the Voisin Brothers.

New Principles in Aero Engine Design.

Despite the absence of a flywheel and carbureter and the increase in the number of cylinders, the engines described do not materially differ in principle from those employed generally for automobiles. There are a small number of constructors, however, who have sought to decrease weight not by the suppression of a flywheel and the paring of the metal at every possible point, but by entirely new design. Foremost in this school is Robert Esnault-Pelterie, who has produced a seven-cylinder air-cooled engine without flywheel, with but a two-throw crankshaft for the whole seven cylinders and a single cam for all the valves.

Without entering minutely into the genesis of the engine, it is interesting to note that Robert Esnault-Pelterie set out to design a multiple cylinder engine, the cylinders of which, of an even number, would be placed at equal distance around a circular crankcase, the pistons operating a one-throw crankshaft. Theoretically it was impossible with this arrangement to obtain the firing of the cylinders at equal intervals, and practically it was impossible to efficiently lubricate those cylinders having their heads downward. The result was the

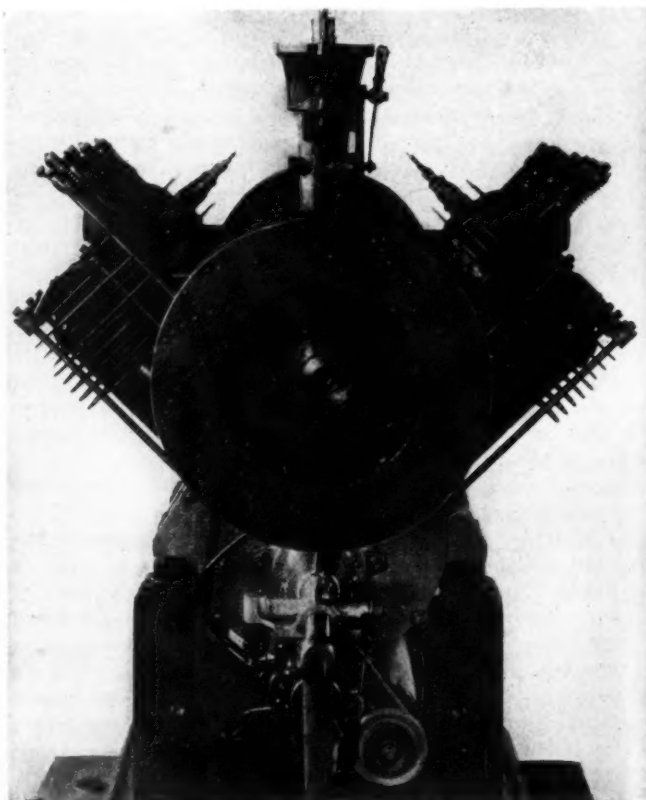


Fig. 4—Renault Eight-Cylinder Air-Cooled Aeronautical Engine.

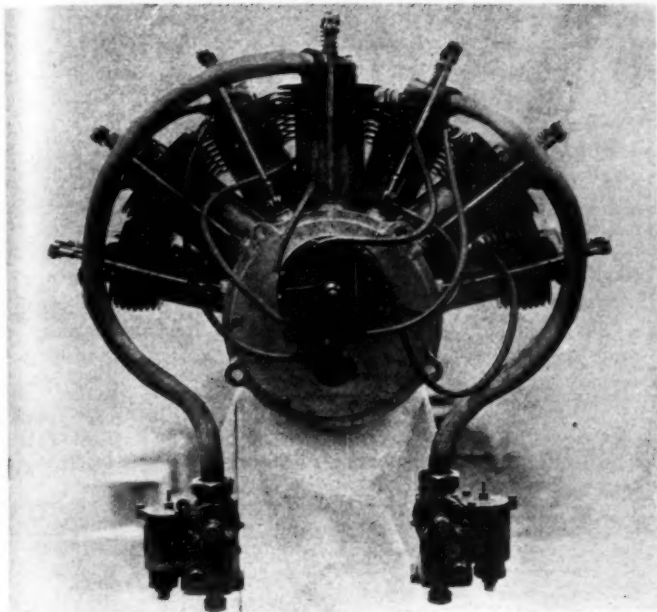


Fig. 5—Esnault-Pelterie Seven-Cylinder Air-Cooled Aeronautical Engine, as Employed by This Inventor on His Aeroplane.

production of a five or seven-cylinder engine the cylinders of which were staggered round the upper half of a circular crankcase, and all connected up to a two-throw crankshaft. By means of this radical departure from standard lines of gasoline engine design, Esnault-Pelterie has been able to obtain an engine developing 35 horsepower on the brake at a speed of 1,500 revolutions per minute, for the extraordinarily low weight of 115 pounds. This weight includes carburetor and all ignition accessories, the motor in fact being in running order. That it is more than a piece of clockwork is proved by the fact that Esnault-Pelterie has used the engine continuously on his own aeroplane and executed several flights in his new machine by means of its aid.

Having an odd number of cylinders and a two-throw

crankshaft, it was of course necessary to have more pistons connected up to one of the throws than to the other. On the seven-cylinder engine the two arms of the crankshaft, which by the way only weighs seven pounds, are laid at an angle of 180 degrees, three connecting rods being attached to one and four to the other. The shaft is balanced to counteract the uneven division. The cylinders are really staggered in two series on the crankcase, the four forward ones in a line with pistons connecting up to the forward throw of the shaft, and the three others slightly in the rear connecting up to the other arm.

The cylinders of the Esnault-Pelterie engine, cast separately with cooling flanges on the upper portion, have a bore of 3.3 inches and a stroke of 3.5 inches. They are attached to the one-piece aluminum crankcase with three bolts each having two different threads, so that the slackening of the nut would tend to the tightening of the lock nut. Instead of the wrist pins being attached to the interior walls of the piston, as is the usual practice, the bearing is here screwed into the head of the piston, the steel walls being far too thin to allow of any attachment.

Something New in the Matter of Valves.

Valve design is just as radical a departure from fixed standards as any other portion of the engine, each valve, placed in the head and operated by an overhead rocker arm, fulfilling the functions of both inlet and exhaust. Above the flat face of the valve—the valve is of course reversed, the head being downward—is a cylindrical cage provided with a series of holes and encircled by a steel collar. On the full opening of the valve aspiration takes place in the usual way, the exhaust openings from the cage to the outside being closed by the collar. On compression and firing strokes the valve operates also in the usual manner, but on the exhaust stroke the collar closes all connection with the intake pipes, the valves slightly leaves its seat and the spent gases are evacuated through the opening in the cage left free by the position of the collar, showing that the inventor has departed entirely from the usual method of valve operation. There are thus three positions for the

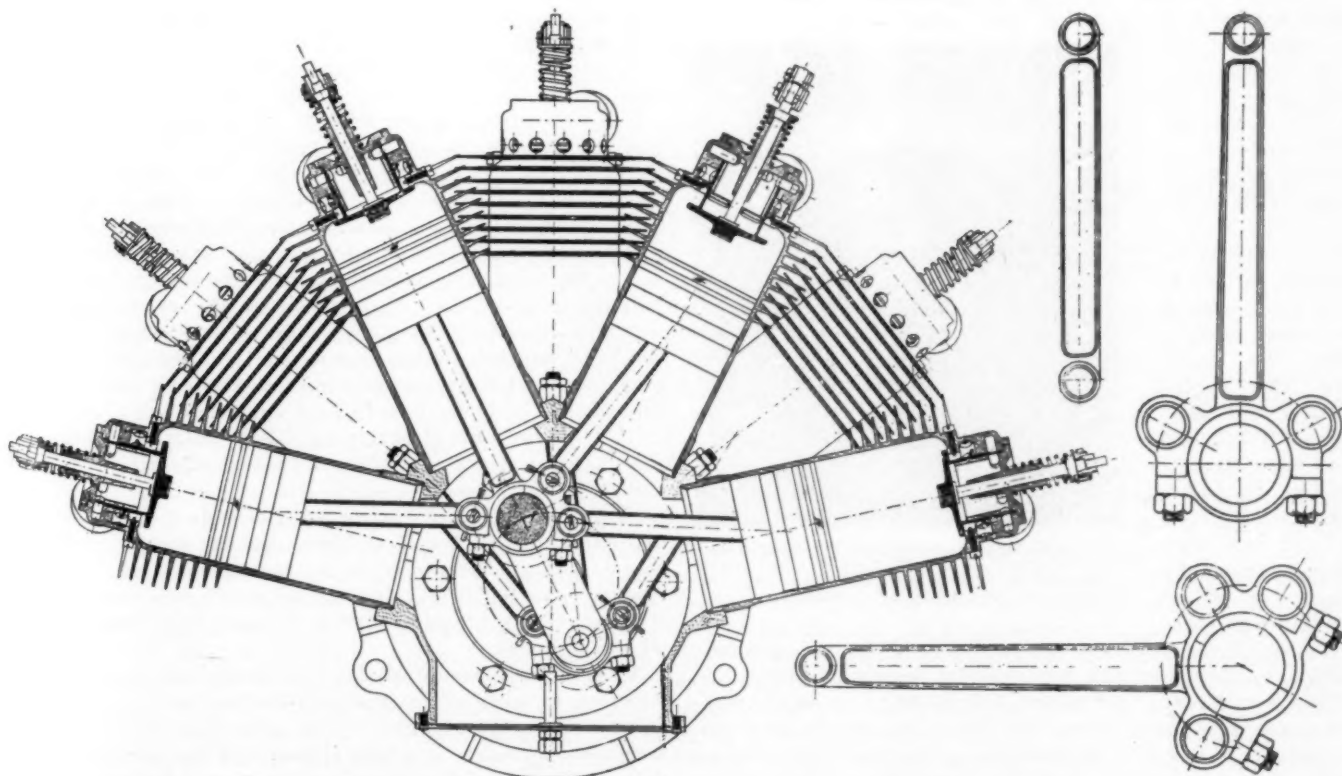


Fig. 6—Cross Section of Seven-Cylinder Esnault-Pelterie Aeronautical Engine, also Showing the Connecting Rods.

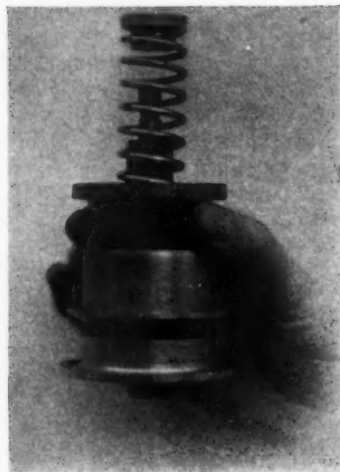


Fig. 7—Combined Inlet and Exhaust Valve as Used on Esnault-Pelterie Seven-Cylinder Aeronautical Engine.

valves; closed, fully open for the intake, and partially open for the exhaust. Though at first sight complicated, the valve mechanism is in reality exceedingly simple, for it practically abolishes one valve with all its attendant mechanism and solves the hitherto difficult problem of cooling the exhaust valve on an air-cooled engine by reason of the passage of the cold current of explosive mixture around the valve at a speed which, translated into miles, often exceeds 180 an hour.

In reality one double cam operates all seven

valves. Had it been possible to place the cylinders in one line a single cam would have been sufficient; owing, however, to the second set of cylinders being slightly to the rear of the first group, the cam, driven off the crankshaft and turning in the contrary direction to the engine, has to be double faced, each face having three large bosses for the inlet and three smaller ones for the exhaust.

Two carbureters are provided for each engine, one feeding two front and two rear cylinders and the other supplying gas to the remaining three. There is little that is distinctive about the ignition, current being supplied by a storage battery and distribution taking place through a commutator placed outside and to the rear of the engine—the side opposite to the propeller—in order to keep it free from oil.

Lubrication is entirely by splash with the difference that in order to prevent an uneven suction of oil into the more oblique cylinders on the lower part of the circular crankcase, the base of each cylinder is covered with a mask provided with an opening for the passage of the connecting rod. This opening increases in size in proportion as the cylinders approach the vertical. Naturally the splash is greater on the inclined cylinders, but as the opening here is smaller the amount of oil allowed to enter is not any greater than that drawn into the central vertical cylinder.

Several attempts have been made to produce an engine with an even number of cylinders placed at equal distances around a circular crankcase, but none appear to have progressed beyond the testing room. Burlat, following up the four-cylinder revolving motor exhibited a year ago at the shows, has produced an eight-cylinder engine of a similar type, and Farcot has among his many inventions an engine with eight air-cooled cylinders fixed at equal distances around a circular crankcase. Doubtless it would be possible to unearth scores of other attempts to solve

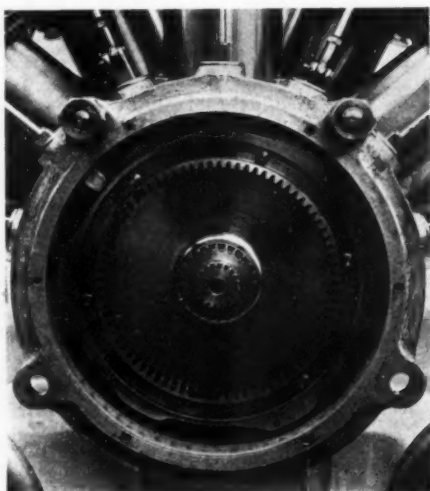


Fig. 8—Esnault-Pelterie Seven-Cylinder Aero Engine. Forward End of Crankcase Is Removed, Showing the Single, Double-Faced Cam Operating all Valves.

the problem of high power with light weight. For the present, however, it is sufficient to leave the inventors to their task; when they have succeeded in producing an engine that will meet the exacting requirements of the knights of the air, who, it is hardly necessary to mention, are much more exacting than the most critical automobilists, it will be time enough to call attention to their products.

"RÉPUBLIQUE" ACCEPTED BY FRANCE.

PARIS, Aug. 8.—After being tested in every possible manner, *République*, the dirigible airship built by the Lebaudy brothers, has been handed over to the military authorities of France and is henceforth the chief aerial fighting force of the nation. The official flight took place at Moisson, 30 miles from Paris, under the control of Engineer Julliot, designer of the *République*. The slight defects that had been revealed in the preliminary trials had all been remedied, with the re-

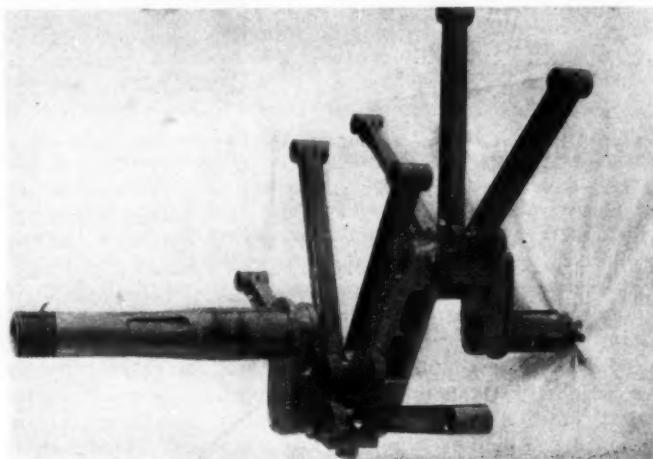


Fig. 9—Two-throw Crankshaft of Esnault-Pelterie Seven-Cylinder Aeronautical Engine.

sult that ballast was perfect and the slight roll of a fortnight ago had disappeared. When the military crew has been sufficiently trained by short journeys around Moisson the airship will be brought to the Chalais-Meudon station in the suburbs of Paris, to leave later for its permanent station on the Eastern frontier.

Louis Bleriot's success with the monoplane type of flying machine has not been of long duration. After proving conclusively that the single plane type was superior to the biplane, as used by Farman, the champion of the former system recently made a number of successful flights of moderate length on the Issy-les-Moulineaux ground, only to fall a victim to contrary currents. While attempting to make a turn the machine was caught in one of the swirls which are so much feared by Farman, suddenly dived down from a height of 100 feet, swung over to the left until the tip of the wing touched the ground, pivoted and flopped to the ground. Though all the forward end of the apparatus was broken and the left wing suffered seriously, Bleriot escaped without a scratch and was sitting upright in his seat when the assistants rushed to his rescue.

Leon Delagrangé, who returned from his Italian tour the day Farman sailed for New York, declares that he will now commence experiments with the monoplane type of flying machine, the biplane having proved itself excellent in calm weather, but very unreliable in a wind and dangerous in whirling currents.

At a dinner given to M. Farman, before his departure for America, to celebrate his winning the Armengaud prize for a quarter of an hour flight, a new prize was offered by M. Deutsch. The sum is 25,000 francs, and the conditions are that the successful competitor must carry Commandant Renard, of road-train fame, across the English Channel.

LETTERS INTERESTING AND INSTRUCTIVE

WHY MORE SPEED WITH LESS ENGINE?

Editor THE AUTOMOBILE:

[1,499.]—I have been greatly interested in following the various transitions through which French racing rules have gone in the past few years, and would like to have a query concerning them answered through the column of "Letters Interesting and Instructive." I understand that the unlimited bore plan of last year—in other words, the fuel consumption restriction, was done away with, principally because it placed no restriction whatever upon the speed of the car. But from the accounts of this year's Grand Prix race which appeared in "The Automobile" at the time, I learn that the speeds averaged by the different competitors, under this year's limited bore rule, were greatly in excess of those attained last year, while some of the single lap records were so very much faster as to make it apparent that some new restriction must be adopted next year—if there is to be a next where the Grand Prix is concerned—in order to keep speeds within a limit that tires may reasonably be expected to endure on such road courses as are now employed for the big international events. What I would like to learn is, How did the designers succeed in getting so much more speed out of their cars where they had to conform to a limited bore restriction, as compared with the cars of the year previous in which there was no limit to the size of the motor. I know that a great many things are possible with the automobile motor, but have not been able to explain this satisfactorily. Allentown, Pa. EFFICIENCY.

It is a matter of common knowledge that a horsepower may be produced by the use of less than 10 pounds of metal in a motor, and, on the other hand, that it is quite possible to use 200 pounds, 300 pounds, or any quantity of iron, to achieve the same result. For instance, the average stationary motor of small size weighs anywhere from 100 to 250 pounds per horsepower, a 5 or 6-horsepower engine weighing more than half as much as a complete 30-horsepower automobile in running order. It is principally a matter of piston speeds and compression, and this accounts in large measure for the difference in the speed of the racing cars of the two years. Again, it is one thing to design a motor that will show the maximum economy, and quite another to produce one that will show the greatest output for its dimensions and weight, regardless of any consideration of fuel consumption for the power delivered. Every motor has what may most aptly be termed its "critical speed." In other words, its rate of delivering work at which it is most economical in fuel per horsepower, and in order to achieve the latter end, it must be run at that speed. Hence, it cannot be said that this year's cars were faster than those of the year previous, because the latter were not run so much for speed as they were for economy. It would not have availed one of the competing drivers much to have beaten all his competitors by even half an hour's time, if he were stranded so much as a hundred yards away from the finish on the final round through lack of fuel, as his victory would have counted for nothing. The rules made the winner the first car to finish the distance on its fuel allowance, and the fact that many of them were unable to do so was probably due to their reckless use of fuel, as it is well known that a motor is very extravagant at extremely high speeds, owing to the amount that is wasted. Practice runs before the 1907 Grand Prix were mainly to find out just how far a car could run on the allowance granted by the committee, and just what speed it had to be run at in order to cover the distance. Many of the drivers learned both well in advance, so it is quite reasonable to suppose that in few cases were the cars let out to their possible speed at any time in the race, as that would have meant defeat in the last lap through lack of gasoline. Some combination of restrictions, such as the size of the motor and the amount of fuel, would appear to be the only logical method of bringing the possible speed down, and it is quite probable that future racing regulations abroad may take some such form as this within the next year or two, if not for next year's Grand Prix, should it be held in 1909.

BUY ONLY FROM A RESPONSIBLE MAKER.

Editor THE AUTOMOBILE:

[1,500.]—I do not recall having seen in your paper any warning to would-be purchasers of machines relative to their selecting a machine the manufacturer of which not only furnishes duplicate parts at reasonable prices, but who exercises the same care in filling orders promptly and well as they do in soliciting purchasers of the machine. About three weeks ago I sent to one of the best known manufacturers in this country the price of a float valve and stem for a carburetor. A week later I received the valve. I addressed another letter to them and at the end of another week received the float. I am writing them to-day in regard to the stem.

Further, I have observed that many young men, especially in small towns, are enticed into buying a machine by the big discount offered to agents. Aside from the fact that some of the concerns offering these large discounts frequently go out of business, any purchaser of a type of machine, the construction of which is new to his community, is more or less handicapped, and should the manufacturer go out of business, he is up against it for duplicate parts. It is well known that automobile repair establishments in small towns usually represent certain machines, and in many instances they do not take the interest in repairing other makes that they should. Would it not be well then that every one desiring to buy a machine should inquire of his friends their experience in getting supplies from the manufacturer of the machine which he has in view? R. F. HARGRAVES.

Port Norfolk, Va.

The point that you call attention to in your letter has been constantly harped upon for the past two or three years in these columns whenever the question of buying a car has been at issue, and the experience of those who have invested in any of the numerous makes that have sprung up and disappeared within the last three or four years have had this brought home to them very forcibly. This, however, has no direct bearing on the unfortunate experience that you detail in your letter with regard to obtaining a small replacement part, in view of what you say in regard to the standing of the firm in question, and it is to be hoped that such experiences are not common. There has been a great deal of progress made in the past two years in the matter, not only of supplying replacement parts, but of doing so at reasonable prices, and there seems to be no doubt that as time goes on this will finally be brought down to a basis where it is on the same plane with that of any other business.

SOME QUERIES ON A NUMBER OF SUBJECTS.

Editor THE AUTOMOBILE:

[1,501.]—I would like to ask a few questions:

1. The advantages and disadvantages of a three-cylinder, four-cycle gas engine.
2. If in a two-cycle engine there is just as much compression in pounds in the crankcase as in the cylinder at the joint time of compression.
3. Take a racing machine, about how many r.p.m. does the engine go when the car is travelling at 60 miles per hour?
4. The duties of a mechanic on a racing machine.

Warren, Mass.

LOWELL S. ELLIS.

1. The three-cylinder motor of the four-cycle type is much more difficult to balance so far as its power impulses are concerned, than the four-cylinder motor of the same type, which accounts for its rare use on the automobile. That is, whether the crankpins are placed 120 degrees apart round the circle, or two of them are in the same plane with the third at 180 degrees, the order of firing is irregular, and though well-balanced mechanically, in the case of the 120-degree arrangement its impulse balance is poor in either case. Although largely employed for stationary work, as well as to some extent in marine practice, we could never see that the three-cylinder motor had any particular advantages on the automobile. However, there are authorities who are of the contrary opinion, and if they wish to do so, they may come

forward in these columns in support of their side of the question, as it may be of interest to readers generally.

2. This question is rather ambiguous, but we presume you mean by "at the joint time of compression," the moment that the charge is transferred from the crankcase to the combustion chamber, because when the piston is compressing, a fresh charge is being drawn into the crankcase. If this be correct, it is evident that the answer to your question must be "No." With the same degree of compression on either side of the transfer port, i. e., in the combustion chamber and in the crankcase, there could be no movement of the charge. As it is, the fresh charge is under a compression of anywhere from 3 to 8 pounds, according to the design of the motor, while in the combustion chamber it is very slightly above atmospheric, thus permitting the inflow of the supply of fuel from the crankcase. The amount of pressure in the latter, the size of the ports and the like, are all calculated to permit of as quick a transfer as possible, as the port is only open for a very small fraction of a second.

3. This naturally depends upon whether it is equipped with a high or a low-speed motor and what its gear ratio happens to be, so that it would be impossible to even approximately answer the question for this particular speed without knowing something more about the car. In general, however, it might be placed at anywhere from 1,200 to 1,500 r.p.m., but as many of the cars in important road races average speeds as high or better than this for the whole distance, and go as far as 90 to 95 miles on straight stretches, it is evident that their motors are capable of running much faster.

4. While running, the chief duties of the mechanic are to watch the oil, and a special hand pump by means of which extra oil can be injected directly into the crankcase is usually provided. He also watches any other adjustments that can be made while under way, and when stopped for repairs or tires, assists the driver in making these, the rules under which most recent contests have been run providing that only the driver and his mechanic can attend to such things and that outside assistance will be sufficient to disqualify the car.

MORE ABOUT THE COAL-BURNING STEAMER.

Editor THE AUTOMOBILE:

[1,502.]—A good many people interested in automobiles know of my efforts to bring out a steel-tired steam auto with no differential and burning coal. I took the auto out last week and ran it about town. All went fine except the fire. I had 90 pounds of nut coal in the fire-box and it was impossible to consume all the steam. Our village is very hilly, and going down hill with steam shut off the gauge would gain 110 pounds in one minute. I went up a 15 per cent. grade with nine men in the car and the brakes on slightly. It turned corners perfectly, proving that a differential is not necessary with steel tires. I am now putting in a kerosene burner and a steam pump, so I can get water in the boiler with the auto standing still. I would like to know whether a mixture of gasoline and kerosene would be better than pure kerosene, and, if so, in what proportions. By the way, I got up 15 pounds pressure in 9 1-2 minutes with kindling wood, before I put on coal. Oneonta, N. Y. M. W. HAZELTON.

We cannot advise you about the gasoline-kerosene mixture from personal experience, but if you get a burner specially made for kerosene it would probably be best to stick to that fuel. In any case, the proper proportions of a mixture could only be determined by experiment in each individual car. But what is the matter with coal? As you have succeeded with it so far, it would seem that a little ingenuity would enable you to fix up some sort of a fire-controller to prevent such wasteful generation of steam.

BOOKS ON MOTOR CONSTRUCTION AND DESIGN.

Editor THE AUTOMOBILE:

[1,503.]—Will you please let me know if there is anything published that covers the subject of the construction of gasoline motors, more particularly the setting or adjusting of the valves. Somerville, Mass. G. P. BIAGIOTTI.

There seems to be a lack of works of a technical nature on the subject of the design and construction of the auto-

mobile motor so that it is impossible to refer you to any single work from which you can obtain the information you are in search of. "Elements of Gas Engine Design," by Sanford A. Moss, M.S. Ph.D., and Roberts "Gas Engine Handbook," may give you what you want, although the latter is not only old, but is devoted to stationary practice. "The Automobile Pocketbook," by E. W. Roberts, M.E., may come closer to the requirements, though but a small part of it is devoted to the motor. Other works are "The Gas Engine," by F. R. Hutton, M.E. Ph.D., and "Gas, Gasoline and Oil Engines," Gardner D. Hiscox, M.E., but neither of these falls within the requirements as set forth by your inquiry.

WANTED: A DEFINITION OF "INERTIA."

Editor THE AUTOMOBILE:

[1,504.]—Please give me in your "Letters Interesting and Instructive" a good definition of the word inertia. A number of auto cranks, myself included, lately got into an argument relative to the proper meaning of this word. I gave a definition as follows: Inertia is the resistance that a body offers against a change in its position. Anything from your columns will be greatly appreciated. R. G. McCREIGHT.

Camden, S. C.

Inertia is that property of a body by which it tends to continue in the state of rest or motion in which it may be placed, until acted upon by some force. As used by the non-technical, it is almost universally employed in the former sense, i. e., that of the resistance which a body offers against a change in its position, an inert body usually being intended, so that your definition is perfectly correct so far as it goes. The popular impression is that only inert bodies have inertia, it being likewise generally thought that a moving body is possessed of momentum alone, whereas an object at rest is possessed of inertia, and the same object in movement has both momentum and inertia.

INFORMATION WANTED ON COMPLETE GEARS.

Editor THE AUTOMOBILE:

[1,505.]—Could you direct me to any one company that furnishes running gears, complete, minus tires? That is, everything necessary for the chassis of an automobile, but not in their assembled state, the parts to be put together by the buyer. Louisville, Ky. H. E. HARRYMAN.

You will find several advertisers of such materials in our columns, to whom we can recommend you. Vast quantities of motors and parts are now being turned out by independent manufacturers, and the components of a complete car may now be purchased from a jobbing house or from a number of different makers, each one supplying his own specialty.

A RECOMMENDATION FOR DECARBONIZER

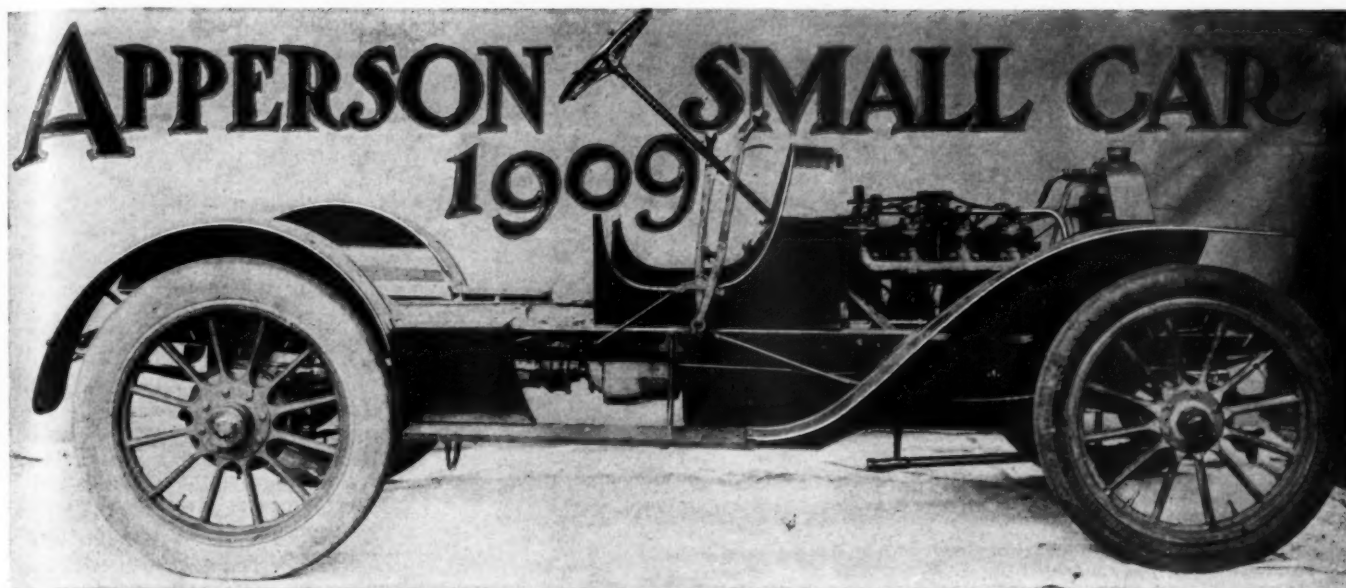
Editor THE AUTOMOBILE:

[1,506.]—With pleasure I write that I have been using the Radium Decarbonizer on a Frayer-Miller 24-horsepower car (air-cooled) for the last ten months as per direction, which is very simple, with perfect satisfaction. It has been now fifteen months since I had the cylinders scraped of carbon and I used the car for thirteen months before I had the valves ground. I have been running this car now for four years, winter and summer, in my professional work, besides taking extended tours with my family during my yearly vacations, and I must say that the car is running perfectly fine with the above treatment. I have no trouble of overheating or pre-ignition. Erie, Pa. P. T. JOHNSON, M.D.

AN EXPERIENCE WITH DECARBONIZER.

Editor THE AUTOMOBILE:

[1,507.]—In answer to Mr. Stark's question (1,497) regarding Decarbonizer. I have used it and several of my friends have used it this year and so far results have been all claimed for it by the manufacturers. Several of my friends and myself used a certain brand of oil and in a few weeks all had carbon galore. Whether it was the fault of the oil, or ourselves, I do not know, but I do know I never had trouble with any other oil carbonizing. The Decarbonizer worked fine and so far there is no indication of injury to the cylinders or pistons. Duluth, Minn. F. C. LEE, D.D.



THERE are not many firms in this country, nor for that matter abroad, who can look back upon 16 consecutive years of automobile manufacturing, and for that reason the sixteenth annual announcement of the Apperson Brothers Automobile Company is of more than the usual interest. Its purpose is to present an entirely new car of the medium-powered type to sell at a low price, and is coupled with the statement that the company has largely increased its manufacturing facilities and is planning to turn out 2,000 cars during the coming year. While "Model O," which is the official designation of the newcomer, is a new production and in a field that the Apperson Brothers Company has not entered hitherto, it takes but a glance at the specifications and the photographs of the car to reveal the fact that it is almost an absolute replica of the standard Apperson cars of higher power, on a slightly smaller scale.

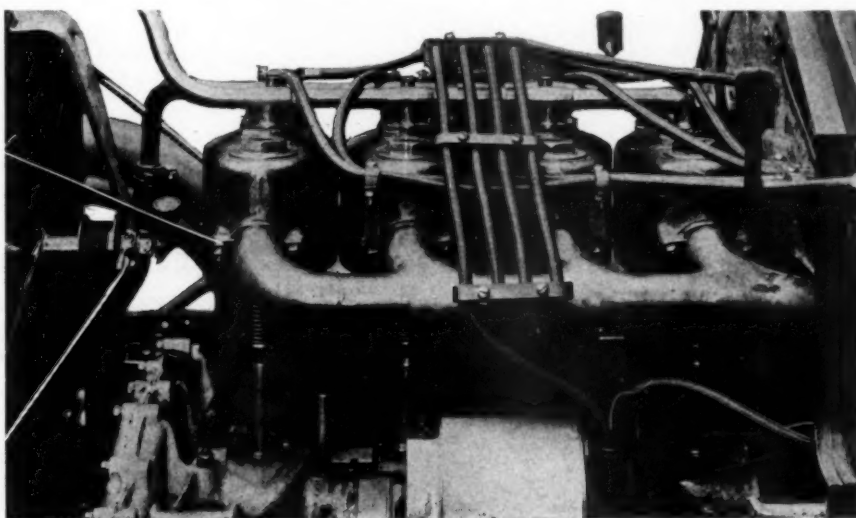
Characterized Throughout by Apperson Features.

This is at once evident upon making an inspection of the motor, which is constructed with the independent cylinder castings and oppositely disposed valves in outboard ports that have always distinguished the Apperson motor. The valve lifters and cages are of a specially designed type made with a view to reducing the noise, and for their enduring qualities. The half-time shafts operating the valves are enclosed in the crankcase, and either can be withdrawn at the end of the motor without interfering with the adjustment of any of the other working parts. In order to be able to compensate for wear, the valve lifters are provided with a device which permits of adjusting their length to suit that of the valve stem.

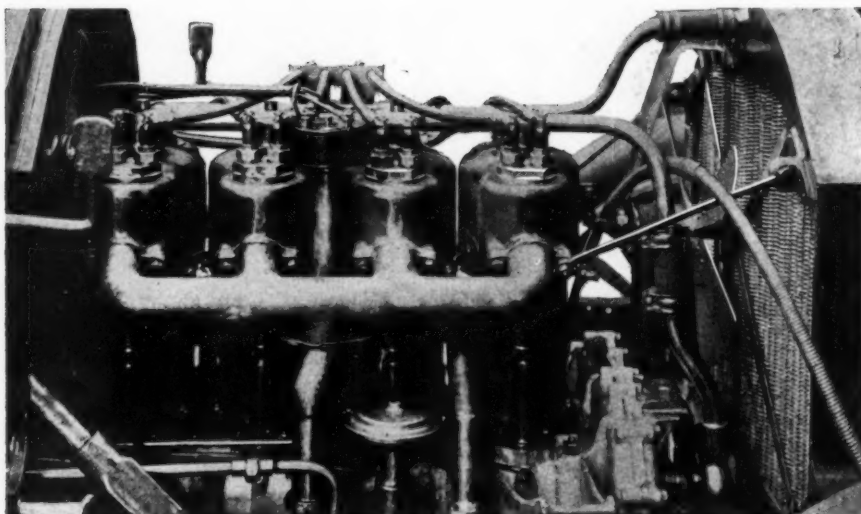
While the motor appears to be an absolute copy of the larger Apperson engines, it is not merely a reproduction of the latter, but has been specially designed for the purpose, the valve ports, com-

pression, exhaust clearance, timing and other matters pertaining to the production of an efficient high-speed motor having been carefully worked out in the design. The motor normally develops 28 to 32 horsepower, but has shown as high as 38 horsepower on the brake. Its rating under the A.L.A.M. formula is 30.4 horsepower. Every part has been carefully jigged in the factory, making them all interchangeable for replacements or repairs. The carbureter is of the type made in the home factory and employed on the Apperson product, while a mechanically operated, force-feed type of lubricator is fitted to take care of this essential, oil being delivered directly to the bearings. For ignition, the standard equipment will consist of a set of accumulators and a four-unit coil, a dual ignition system with independent plugs served by a high-tension magneto being catalogued as an extra. A fin tubular radiator of the vertical pattern, such as has characterized Apperson cars for some time past, is employed, its head-on outline having been altered somewhat by the adoption of an extension to meet the forward end of the dust pan extending under the engine and which serves to keep the working parts of the motor and transmission free from road dirt and grit. A fan flywheel of the latest type has been adopted on the motor and tests, as well as service try-outs, have shown that this aids materially in the cooling of the motor. In this and many ways, the painstaking attention that has been paid to every detail of the design of the new Apperson small car are apparent.

The contracting band type of clutch which has always been an Apperson feature, has been perpetuated in this new small car of the same make, consisting of a cast steel brake band contracting on a circular bronze drum. In fact, this Apperson clutch has been in use ever since 1895 without any change whatever, and certainly this length of time in service is sufficient to substantiate the makers' claim.



Showing the Situation of the Magneto and Wiring on the Apperson 1909 Small Car.



Two Spark Plugs Are Carried Over Each Intake Valve.

that it is one of the most reliable types of clutch ever put on an automobile. The gear-set is what is familiarly known as the selective type, giving three forward speeds and reverse and controlled by the usual single side lever. Particular attention is called to the fact that the gear-set housing is all one piece, consisting of a single aluminum casting, and what is far more important, that the change speed gears and shafting can be lifted out intact without any further preliminaries than the removal of the cover of the case, it not being necessary to touch a bolt or nut aside from this. In fact, there is not a nut or bolt in the interior of the housing, so there is nothing whatever to work loose and cause trouble.

The design of this gear-set has been thoroughly worked out from years of actual experience, and the makers are of the opinion that it more closely approaches the distinction of being "fool-proof" than any other on the market. The gears are made from the best grade of Krupp chrome-nickel steel, which is generally conceded to be the best possible for the purpose, while the shafts are supported on the latest pattern of New Departure ball-bearings. The latter are specially designed to take both thrust and radial loads and are fitted with two rows of balls, instead of one, as is usual.

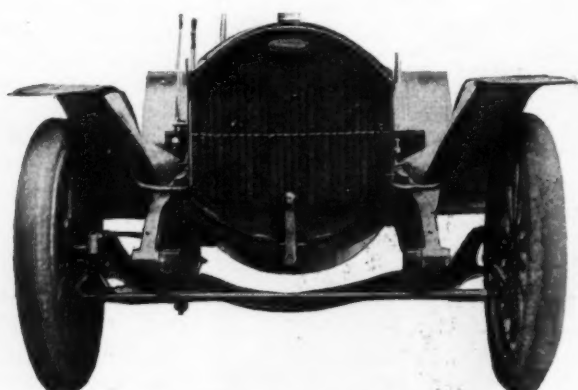
So far as the description goes, it will be noted that the car has the hall-mark of the Apperson factory stamped all over it, in that, with few exceptions in the shape of detailed refinements here and there, which are to be looked for in every new production, it exactly follows those lines that have always distinguished Apperson motor design and construction. It is in the final drive by propeller shaft that the most radical and probably the only divergence of importance from what have come to be Apperson standards has been made, this firm having always been strong and persistent advocates

of the double chain drive. So far as their regular models of higher power are concerned, this is still adhered to, the adoption of the shaft drive on the smaller merely being a recognition of the fact that it is better adapted to the car of medium power and speed. The universal joints employed on this shaft drive are of the very latest type and are protected by oil and dust-proof housings. When carrying its normal load, the motor, gear-set and rear axle are practically in the same horizontal plane. The standard gear ratio employed is 3 to 1.

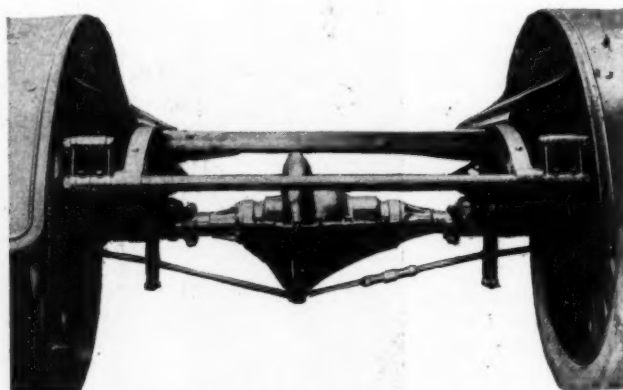
Some of the Chassis Specifications.

Following standard practice, the frame is of the usual pressed steel, channel section construction amply reinforced, and is carried on semi-elliptic springs front and rear, the former measuring 40 inches in length and the latter 50 inches. The springs are attached with a view to preventing breakage under the most strenuous conditions of service. The steering gear is of the usual worm and segment type that is entirely proof against movement from road shocks, while the brakes are of the internal expanding and external contracting types placed in hubs on the rear wheels. The former constitute the emergency brake, operated by hand lever, while the latter are employed as the service brakes. The forward axle is a one-piece drop-forging of Vanadium steel and of I-beam section. The spring saddles are forged integral with it, while the steering heads are carried on ball-bearings. For the rear axle equipment, what is commonly known as a floating type has been adopted, but it has been specially designed so that the driving wheels stand on "plumb spokes," a feature to be found in but very few cars. This prevents spreading of the wheels and makes a much easier running and faster car. Thirty-four by 4-inch wheels are used, the wheelbase being 110 inches. With a three or four-passenger body, the new Apperson Model O, lists at \$2,250, and \$2,400 with a five-passenger touring body. Deliveries are already being made of this newcomer to the Apperson fold.

The "Jack-Rabbit," Model K, 50-55 horsepower, seven-passenger touring car and three-passenger runabout; the Model I, 40-45-horsepower, seven-passenger touring car; the Model M, 35-40-horsepower car, with three, four or five-passenger bodies, and the Apperson 50-55-horsepower, six-cylinder, seven-passenger touring car, will all be continued, so that in designing this latest addition to the Apperson line, it has been the chief object of the manufacturers to extend their price range in order to be able to participate in the large and increasing demand that is daily making itself felt for the well-built car of medium price and power.



Front View, Showing Ball Bearing Vanadium Steel Axle.



Rear View, Showing Ball Bearing Floating Axle.

MAKING A 4,000 FOOT CLIMB.

What appears to be a record demonstration run was made June 27 by Edwin G. Woolley, Jr., in a 1908 Rambler roadster, who covered 36 miles from Salt Lake City to the top of Parley's Canyon Divide, over a 4,000-foot grade. Three passengers were carried and the route was through occasional stretches of sand and three miles of rutty clay road. For the first twelve miles the car ran on high gear, and the remaining distance was covered on the intermediate, the low gear not being used at all. Gasoline consumption for the entire trip was reported not to exceed three gallons. The roadster which made this climb has now covered 1,054 miles without having made a miss.

The mountain ranges to the east of Salt Lake City present grades that are extremely difficult to surmount. The altitude of Salt Lake City itself is over 5,000 feet above the level of the sea and the mountains of Utah tower above the city from 4,000 to 6,000 feet more. The divide mentioned above is one of the



Edwin G. Woolley, Jr., Making Record 4,000 Climb in Rambler Roadster.

have gradients of 50 per cent., and this feature is what gives San Francisco its imposing sky line when viewed from the bay, as the houses have the appearance of being piled on top of one another. The points of vantage on the hills present scenes of great beauty, embracing the broad Pacific on the west, San Francisco bay and its islands on the east, and the active commerce and densely populated districts of the city with distant mountains as a background.

IN THE WONDERFUL PARKS OF LOS ANGELES.

In no spot in the world is the benefit of irrigation more apparent than at Los Angeles, Cal. The city, its surrounding parks and contiguous territory, is a veritable paradise of vegetation, semi-tropical in its nature, while vast stretches of country immediately encompassing, that are as yet un-irrigated, have the appearance of a desert.

Los Angeles was settled by the Spaniards as Pueblo de Nuestra Señora La Reina de los Angeles (City of Our Lady the Queen of the Angels) in 1781, and until 1847 alternated with Monterey as the seat of the Mexican Government in California. It was captured from the Mexicans after some resistance in 1846 by General Stockton. The city is the possessor of 3,700 acres of magnificent parks and botanical gardens known as Elysian, Westlake, Eastlake, Hollenbeck, Griffiths, Central and Plaza parks.



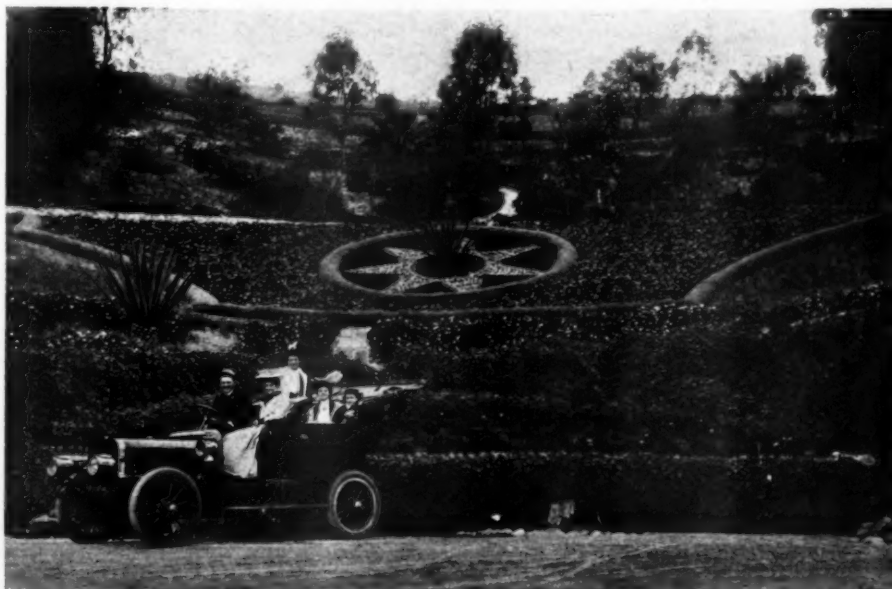
Arthur C. Hull in Cadillac Runabout on Twin Peaks.

altitudes that separates the waterflow, the streams on the west side flowing into the Great Salt Lake and those on the east finding their outlet in the Colorado river. The Wasatch range which constitutes the divide, runs north and south through central Utah. The Uintah range from east to west connects at Strawberry valley.

UP SAN FRANCISCO'S HILLS.

Twin Peaks, the highest altitude on the peninsula on which San Francisco is built, form a background to one of the leading thoroughfares of the City of the Golden Gate, and are 900 feet high. Some idea of the grade percentage may be obtained from the photograph in which Arthur C. Hull, of that city, is depicted climbing one of the peaks in a Cadillac runabout. Pacific Heights next approach in altitude the Twin Peaks, but are somewhat lower, while Nob Hill, which contains the palatial residences of the California money kings, is about 300 feet high and well adapted for habitation.

The streets north and west of Market street strike boldly at the hills and



W. M. Hill's Winton (Which Has Traveled 38,000 Miles) in Elysian Park, Los Angeles.

ILLUSTRATING THE AUTOMOBILE'S GROWTH.

Indianapolis, Ind.—The last of the picturesque stages that have traveled over Indiana roads since pioneer days are disappearing, and within a few months it is likely not one will be left. The automobile has supplanted them gradually during the last two years. Although Indiana prides itself on its rapid development, there are two counties untouched by railroads, while a third county has only one railroad touching one corner.

Within the last two months a number of new companies have been organized for the purpose of operating automobile lines, and all are meeting with success. Last week the Greensburg, Napoleon, and Osgood Rapid Transit Company was organized, with \$5,000 capital, and will operate an automobile line between those points, with headquarters at Napoleon. A twelve-passenger Rapid 'bus has been purchased.

George Straub, of Corydon, who has owned the horse-drawn stage between Corydon and New Albany for years, has decided that an automobile would be more profitable. He is organizing a company, and an automobile 'bus will be purchased soon.

The Connersville Motor Transit Company has made a success of an effort to use automobiles in place of street cars in that city. Two twelve-passenger cars make regular trips to different parts of the city and to the suburbs, with a five-cent fare.

Recently the Richmond Transportation Company was organized at Richmond, and has been operating a twelve-passenger car between that city and Reid Memorial Hospital, touching a large residence section not reached by city street cars. So far as known, this experiment has been the only unsuccessful one in Indiana, and the company is not ready to quit, believing the plan is practicable. It was found that the car in service did not have sufficient power to climb the hills, and a new one is to be purchased.

Temple, Tex.—Another addition to the rapidly increasing list of automobile stage lines was made last week when two 22-horsepower cars were put in operation between this city and Marlin. Although the two places are but 35 miles apart, the round trip by railroad requires a day and a half. Some agitation for an interurban electric line which had been made attracted the attention of J. F. Robinson, of San Antonio, and as the result of his investigations he decided to establish the stage. The route will include the villages of Oenaville, Blevins, Belfalls, Chilton and Mooreville.

Dallas, Tex.—A regular automobile stage service was instituted July 22 by the Dallas Motor Car and Transit Company between Sanger's Corner and East Dallas. Two large cars of the sight-seeing type are in use, and it is expected to make the trip in 20 minutes when Ross avenue is finished. At present the cars have to take to the side streets in places, and the schedule cannot be maintained. Cars leave at each end every twenty minutes from 6 A.M. till 12 midnight. J. A. Bergfeld is president of the company, which has its shops at Monarch and Garrett avenues.

Washington, D. C.—The Post Office Department has received the five electric mail wagons for which it contracted recently and will put them into commission immediately, supplanting the present horse and wagon collection system. They will be supplemented August 15 by two more cars provided and run by letter carriers, an allowance for this purpose having been made. When all are in operation eight men and twelve horses will be saved in the city mail collection service.

New York Times:—In this "horseless age" the sprinkling of streets with water is going out of fashion. Thirty-three miles of Boston's thoroughfares are now either under oil, calcium chloride, or "tarve," a mixture much used on suburban highways. In New York top dressings of oil have been tried successfully in the parks. To the automobile's propensity of stripping the highway of its surface covering we shall owe the abolition of street dust altogether, and this will certainly be one of the greatest boons it can confer.

Salvationists Adopt Auto.—The founder and leader of the Salvation Army, General Booth, began his summer campaign in Dundee, Scotland. From that city he journeyed southward, preaching in Perth, Newburgh and Tayport. This year he is making use of an automobile, painted white, with "Salvation Army" on each side in gilt letters. Whenever the General desires to preach—whether it be on the country highway, or on the common of a town—the car stops and an adjutant unfurls a huge green umbrella. Drums and fifes then proclaim that the Army will hold a meeting.

Minneapolis, Minn.—The latest addition to the equipment of the Minneapolis Fire Department is a Wolfe touring car, which has been purchased for the use of Chief J. R. Canterbury. The car is made in Minneapolis, and is now in daily service as the chief's wagon. It is stationed at the city hall, and has been first on the ground at so many fires recently that the members of downtown companies are asking for motor engines and carts.

Baltimore, Md.—The Baltimore Taxicab Company was recently incorporated under the laws of Delaware with a capital stock of \$150,000. The incorporators are George W. Knapp, Charles E. Ford, W. S. Belding, N. B. Loeb, Wilson J. Carroll, all of this city, and Charles Berg, of Philadelphia. The company will operate ten cars of 20 horsepower beginning next month. E. H. Clarke will manage the business.

Ogden, Utah.—In a few days several large sightseeing automobiles will be put in service from the mouth of the Ogden canyon up as far as the Oaks for the benefit of canyon visitors. The company which will operate the line has been incorporated as the Ogden Canyon Automobile Company; J. S. Corlow is president; Albert Scowcroft, vice-president, and Joe Decker, secretary and treasurer.

Bunceton, Mo.—An automobile stage service may soon be established between this town and Boonville and Tipton. Mayor O. H. Cramer and one or two others have been working quietly to this end, and have received much encouragement. A single 16-passenger car will be purchased to start with, and if the demand is sufficient another may be added.

Council Bluffs, Ia.—Plans are under consideration for the establishment of an auto bus line between this city and the Iowa School for the Deaf. A car will be run from the corner of Pearl street and Broadway every hour. Other lines may be started later. Among those interested in the project are H. F. Knudson, J. R. McPherson and Henry Sperling.

Louisville, Ky.—The police department of this city has just acquired two automobile wagons, and a 45-horsepower car has been purchased for Millmore Tyson, chief of the fire department. The chief's auto has a large box on behind to carry his fire togs and is equipped with a powerful searchlight.

Clarkston, Wash.—Clarkston now boasts a passenger automobile which runs between here and Lewiston. J. W. Horton and Scott Cowan are the owners and expect to have the machine make regular trips every half hour. If well patronized they will add another in the fall.

Kansas City, Mo.—This city may see its first taxicabs in service before the first of next year. Several local men of prominence are said to have organized a company to introduce them here; twenty-five will probably be ordered to start with, similar to those now in use in New York and other Eastern cities.

Washington, D. C.—The District of Columbia Water Department has added to its already very complete equipment a 3,000-pound Franklin truck, to be used as an emergency car. This latest acquisition has a speed of approximately 20 miles an hour and was constructed especially to meet the requirements of the work.

Jacksonville, Fla.—An automobile line has been established between Bartow and Mulberry and is a money-making proposition, as it is hauling a great many passengers.

Evansville, Ind.—Charles Sibley, of New Harmony, has plans under way for the establishment of an automobile line from that town to Mount Vernon.

DETROIT TO NEW YORK IN AN ELECTRIC

AFTER being eleven days on the road, during which they covered 916 miles, G. M. Bacon, chief engineer of the Anderson Carriage Company, Detroit, Mich., and G. D. Fairgrieve, one of the company's sales representatives, rolled into New York City in a Detroit electric, conclusively demonstrating that the electric vehicle has other fields than that of city work alone. In other words, there is no reason why it cannot be considered as an ideal car for a leisurely tour anywhere in the Eastern States where charging stations are numerous and never very far apart. The entire trip was made at an average speed of 11 1-2 miles an hour, and 63 miles was the average distance covered on each charge of the battery, despite the great amount of mud and road under construc-



Starting from the Pontchartrain at Detroit.

tion that the electric tourists were compelled to plough through *en route*. With the exception of a single puncture, received just this side of Buffalo, and the necessity for tightening the chains at Geneva, not an adjustment was made on the car in the entire trip, the other three tires not even being pumped, although the car weighs 2,000 pounds and carried 150 pounds of supplies, equivalent to a third passenger.

During the course of their leisurely trip, which was not undertaken with a view to making a record of any kind, but merely to show what the Detroit electric was capable of, the tourists had many amusing experiences. They were badly handicapped by not knowing the country through which they were passing, and, in consequence, could not outline any schedule that would insure their reaching a charging station at the end of each day's trip, but despite this they were not delayed on that account at any time. One of their most interesting experiences grew out of this lack of knowledge of the country and it shows that with a little resourcefulness an electric may be run anywhere through a populated country. According to one of their informants, current was obtainable at Ashtabula, O., but upon arrival there they found they had been misinformed. They were then 30 to 40 miles from Erie, Pa., the next large place on their route, and it was naturally out of the question to travel that distance. They pushed on, however, and a stop was made at Coneaut, O., where connection was made by throwing a wire over the trolley line, and a half barrel of water used as a horse trough was utilized as a resistance through which to cut down the 550-volt current to the required strength for charging the batteries. Upon arriving at Little Falls, N. Y., a place that had been counted on as a recharging station, it was found that the electric light and power plant had shut down for the night before they got there. The obliging attendant, however, ran one of the exciters to accommodate them and the batteries received their full charge before morning, no difficulty being experienced anywhere along the route to get a

full charge over night. An experience practically identical with what they encountered at Little Falls awaited them at Hudson, N. Y., but the sight of an electric car on a long jaunt aroused so much interest that aid was always forthcoming and no charge was made for the accommodation in any instance, though if the current had been paid for at the usual prevailing rates the cost of the trip, so far as "juice" was concerned, would have been about \$8 to \$9, as the car was only on charge 84 hours during the trip.

The only time that the car was unable to run was between Pittsford and Menden, just this side of Rochester. There the electric tourists found themselves on a high-crowned, yellow clay road with the rain coming down hard and no chains on the driving wheels. To have gone any further would have meant the ditch, as it was impossible to run without having the car skid all over the road, which shows that it is a good thing to have chains along.

The average mileage of 64 miles on a charge does not represent anything near the maximum covered without a stop for "juice," despite the extremely adverse weather and road conditions, all of which tend to cause an electric to consume power at an excessive rate for the distance covered. From Buffalo to Rochester, a distance of 77.9 miles, the rain came down heavily for all except 14 miles of the way, making the roads very heavy, in spite of which the distance was covered on a single charge. From Albany to New York there was rain for practically the entire distance, as was the case in Ohio and further west in New York; many of the State roads were ploughed up in the course of rebuilding. The chains were kept on all the way from Albany in, but the distance



Ascending One of the Many Grades Near Erie, Pa.

from Poughkeepsie to New York City was easily made on a single charge in spite of the adverse road conditions.

Bad going did not prevent an excellent showing where distance was concerned, the car averaging about 84 miles a day, the high odometer reading being accounted for by the fact that in numerous cases it was necessary to make detours of several miles to avoid roads that were closed on account of construction, and owing to the numerous demonstrations of the little Detroit electric that were given in every town where the tourists made a stop. Messrs. Bacon and Fairgrieve were determined to go as far as they could without meeting any extreme conditions, or until the task of getting along began to exceed the pleasure and profit to be gotten out of the trip. On being compelled to push or tow, they were going to ship the car home, but they never even came within hailing distance of that misfortune. The Detroit electric in which they made the run from Detroit to the metropolis is equipped with a 48-volt Elwell-Parker motor, driving to the rear wheels by chain, and a 24-cell, 11 MV Exide battery.



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LIMIT BOTH BORE AND STROKE IN RACING.

The results of the recent Grand Prix race certainly seem not to warrant the continuation of the 155 mm. maximum bore rule for another year. The French designers who proposed and supported this rule have been the first to admit its defects; and, although they have been accused of self-interest and of wishing to establish such rules as will practically assure a French victory, their position is, nevertheless, quite justifiable. It is undeniable that tires under present high speed racing conditions introduce an extremely undesirable element of luck into the contest.

In the list of proposed amendments, one which has found considerable backing is to limit the stroke as well as the bore. S. F. Edge, the well-known English racing man, is quoted as saying that it is a mistake not to take the stroke into consideration, as it will result in engines of abnormal length of stroke, which are very severe on the mechanism and tires, and at the same time cause a considerable amount of vibration throughout the chassis. "I feel sure that the tremendous failure of tires throughout the Grand Prix race was due, to a large extent, to the length of stroke employed in many of the engines," Mr. Edge comments.

A glance at the specifications shows that the average stroke of the engines has increased from 6.08 inches in

1907 to 6.63 inches in 1908, in spite of the fact that the limited fuel consumption rules in 1907 seemed to favor long-stroke engines. It is hard to believe, however, that this increase alone was responsible for the terrible slaughter of tires. All designers have a pretty close realization of the maximum permissible piston speed, and when they increase the stroke they may be depended upon to decrease the maximum number of revolutions per minute in proportion. Besides, any increase in the stroke means an increase in the height of the engine, and consequent raising of the center of gravity—something never to be risked on a racing car. The true explanation of the unprecedented amount of tire troubles will very probably be found in the increased weight of the cars, which averaged 300 to 400 pounds heavier than those of last year. This extra weight was, in most cases, placed directly over the rear axle, with the idea of securing better adhesion. With the size and strength of the tires remaining the same, and speed increased, the result was to be expected.

Another proposition, which seems to strike much more closely at the root of the difficulty, is to still further decrease the maximum bore. Mr. Edge proposes 127 mm., which translates to a few thousandths over five inches. Such a rule would certainly eliminate tire troubles, both by lightening the cars and by reducing their speed. The question then arises as to whether the reduction of the speed would not take away so many of the spectacular features of the race as to preclude any possibility of its being a financial success. Many of the constructors assert, however, that they can build cars of this size with a speed of 90 miles an hour, which ought to furnish enough excitement, and, owing to the greater regularity to be expected when the disturbing element of tires is removed, the finishes should be closer and more exciting. The danger to drivers and to spectators would be decreased, and as the engines would be held at their maximum power for a larger part of the time, the test for them would be even more severe. The list of entries would be more representative, as most makers could enter cars that would be practically stock models, and would thus avoid an expense at present often prohibitive. On the whole, the 127 mm. bore amendment seems well worth trying, and it should go far toward solving the problem of how to make automobile racing a sane and profitable sport.

While this year's Vanderbilt participants are limited neither in bore nor stroke, but must have a minimum and must not exceed a maximum weight, it is generally believed that the fourth race for the famous cup will be the concluding one wherein speed alone is unconfined, except by what strains and stresses the tires will withstand, which factor, of necessity, must contain something in the way of luck. As soon as a limit is placed on speed, it may be that the spectacular features in automobile racing which attract the public will be extracted sufficiently to cause a diminution in interest. Furthermore, many makers, both here and abroad, are now convinced that racing has lost much of its value to the industry, though those who dissent are still industriously active, and will continue to support those big events which take place near large cities and attract thousands of spectators, among whom are many possible buyers in possible plenty. It is safe to predict that over a million people will see the Vanderbilt race and the Long Island Motor Parkway, October 24 next.

PLANS FOR THE NEXT GARDEN SHOW.

The show committee of the A. L. A. M. has awarded to S. R. Ball for the fifth year the contract for the decorative work of the Madison Square Garden show. The general architectural scheme, prepared by W. W. Knowles, will be something entirely different from any previous show, and it is predicted that it will be effectively pleasing.

TIRE MAKERS WILL STOP PRICE CUTTING.

CLEVELAND, O., Aug. 11.—In a continuation of the effort to put a stop to price cutting, another meeting of the tire manufacturers was held in this city to-day. Nothing very definite was decided upon, and it is thought that another meeting will be held some time before September. At the meeting to-day, which was fairly well attended, the impression prevailed that the best methods of stopping the price cutting would be to cut the dealers' percentage of profit, thus giving him practically no opportunity to cut to the consumer. It is also possible that the list price will be shaded somewhat this year.

The "International Motor League" of Buffalo was also considered at the meeting this morning.

Any changes in the list prices of tires will go into effect September 1, and any changes in dealers' discounts will also be announced at that time.

A. C. A. PLANS A LIGHT CAR RACE.

The governors of the Automobile Club of America have approved of a scheme to run a 200-mile race for light cars in connection with the scheduled race at Savannah, Ga., on Thanksgiving Day under European rules, and have handed the project over to the club's contest committee.

Under the proposed limitations each car must have a minimum weight of 850 pounds and the equivalent of a maximum of 3 3/4 inches cylinder diameter for a four-cylinder motor, or an equivalent in effective surface for motors of a different number of cylinders. This would give a range of 7.50 inches to 2.65 inches for four-cycle motors from one to eight cylinders, and 6.35 to 2.24 inches for two-cycle motors from one to eight cylinders. The club announces that the course will be completed by October 1.

DISTANCE ENDURANCE TOURS ARE EDUCATION.

One big manufacturing concern unquestionably believes in long-distance endurance tours, and this is what Col. Charles Clifton, of the George N. Pierce Company, has to say:

"We mix in these national tours for a purpose. It is education and we have come firmly to the opinion that the proper thing to do is to send men from the factory working force to travel on the cars as observers. In making such a trip our men gain a knowledge which cannot be secured in the ordinary testing trip. They ride on cars driven as cars would not be driven in regular tests. In fact, were our men to go out to test cars and abuse them as they have to be abused on these great tours I can firmly say that we would drop them from our list, for the wear and tear placed on a car in one of these two-thousand mile trips is much more severe than any wear and tear which even the most foolish owner would put his car to in a trip. We want to make a car to stand up under anyone who may happen to become a purchaser. From the outset of the big tours we have competed for this reason and the experiences of each year have been carefully noted and incorporated in the cars of the next year. Our experiences have enabled us to produce a car which would do as those of this year did, go through two thousand miles without necessitating the use of even one stock equipment part in the long journey.

"The entire American automobile industry has been benefited by the victory of the Thomas car in the New York to Paris race. The Thomas has beaten European cars in a race around the world and the entire world has had cause to know that America builds cars capable of performing such a feat."

PLANS FOR THE INDEPENDENTS' SHOW.

The show committee of the American Motor Car Manufacturers' Association held a meeting August 5 to perfect arrangements for the Grand Central Palace show, which is to open New Year's Eve. Four schemes of decoration were considered, but none will be chosen until the next meeting, to be held within two weeks. In addition plans were made for the allotment of space among the different classes to be represented. All the main floor and part of the first gallery will be occupied by American and foreign pleasure vehicles. On the first balcony will be the taxicab division, the commercial vehicles and motorcycles. The motor and accessory manufacturers will be on the first and second balconies. A more liberal trade ticket plan will be followed, but the plan for demonstrators will be retained.

Those present at the meeting were: H. O. Smith, chairman; R. M. Owen, D. J. Post, Benjamin Briscoe and Alfred Reeves. E. Rand Hollander, representing the importers, is at present in Europe arranging for the foreign exhibits.



Locomotive Motor Cabs in Philadelphia.

TAXICABS INTRODUCED IN PHILADELPHIA.

PHILADELPHIA, Aug. 10.—Taxicabs are now in service at the hotels and railroad stations of Philadelphia. At the formal opening of the system President Claude S. Jarvis, of the Quaker City Cab Company, took Mayor Reyburn and two score other notables on a short run and afterwards entertained them at luncheon. The cabs are of the American Locomotive Company's make, finished in dark brown with yellow running gears. They were well tested on the opening day, many of them carrying six persons over some very rough roads, but no mishaps marred the celebration.

OLDFIELD DRIVING A STEARNS.

LEXINGTON, KY., Aug. 10.—Barney Oldfield and Charley Soules, his mate, opened the eyes of the farmers and horse breeders at the Blue Grass Fair to-day by putting up miles in 59 1/2 and 59 3/4 seconds, respectively, in their Stearns racing machines. These figures both beat the State and track records. Barney in a three-mile match beat out Charley in 3:17. An Oldsmobile, driven by Phil Barnes, walked away with the two-mile race for fully equipped cars.



THE cement portion of the new Vanderbilt course will be 28 feet wide; crossing all intersecting railroads and highways overhead by cement viaducts, now in course of construction. These viaducts and bridges are the most expensive portions of the new motor highway. They must be fully 20 feet above the level of the intersecting dirt and railroads. The approaches must be tapered down so that the racing cars can take them at full speed. All of the turns on the cement highway are symmetrically rounded and banked, permitting a maintenance of the speed attained on the level stretches.

After leaving the grandstand the racers will have a very fast run over the cement for eight miles eastward to Bethpage, where the Parkway joins what is known as the

Round Swamp road, which runs north, on a slight grade, to the beginning of the Plain-view road. Following this road the car continues on north to its intersection with a new extension of the Jericho turnpike. At this point the course bends directly west, around what has been dubbed the "Flatiron Turn." The cars have a very speedy stretch, nearly all down grade, westward along the Jericho turnpike extension to Jericho, one of the turns on the 1906 Vanderbilt course. From there the new course is over the old Jericho road to its intersection with the old Westbury road, thence south across a very flat country to the Hempstead plains, thence to the beginning of the cement way, and eastward over this to the grandstand, the start and finish.

BUSY PREPARING FOR THE VANDERBILT CUP RACE

NEW YORK, Aug. 12.—With the return of Jefferson deMont Thompson, chairman of the A. A. A. Racing Board and Vanderbilt Cup commission, from a brief vacation spent in touring New England, preparations for the Vanderbilt race have received an appreciable impetus.

Mr. Thompson is confident from correspondence and assurances he has received from manufacturers that the arrangements the commission has made for the elimination trial will not have been made in vain. Previous experience with the Vanderbilt race and the Glidden tour have invariably shown a tardiness in making nominations, the last day, as a rule, bringing the majority. Though the entries for the cup race will close on September 1, chance is given makers who later decide to enter the lists to secure the privilege of starting by the payment of a double entry after that date, up to October 1.

Chairman Thompson, General Manager Pardington, of the Long Island Motor Parkway, and other A. A. A. officials are co-operating with the Nassau county supervisors in their efforts to enforce the speed laws on the roads of that county. The conference at the Mineola court house was the outcome of the commission's pledge to back up the Nassauvians in the matter by way of showing well deserved reciprocity for their liberal-mindedness in granting the use of their highways for the cup race and the practice and elimination trials incident thereto.

It is probable that practice on the new course will be permitted candidates for the elimination trial by the Nassau supervisors between sunrise and 7 o'clock in the morning after October 1. There will be, however, no let-up in the crusade that is about to be started against speeding on the county roads. Drivers of non-competing cars violating the laws in this respect will be arrested by the special motorcycle "cops" to be put on permanent duty, and so will also drivers of cup cars who exceed the speed limit outside of the hours set apart for the practice.

Big Demand Early for Grand Stand.

A big demand is already in evidence for Vanderbilt race boxes on the mammoth grandstand, which is to be built on the cement racing stretch at the starting and finishing point. So large has it been that the cup commission has decided to lease the limited number of front row boxes only to persons who will take them both for the elimination trials on October 10 and the race on October 24. A. R. Pardington has issued a warning against purchasing boxes and seats from any persons claiming to be erecting stands along the motor parkway, inasmuch as the cup commission has secured control of the land on both sides of the cement stretch to prevent spectators from locating outlaw stands. He says it will be impossible to get from such stands any extended view of the race or any details until long after it is over, since all telegraph and telephone wires will be under the control of the commission.

The race will start, as usual, soon after daylight, and the grandstand, which is to be located on a portion of the new cement way, where the spectators are afforded the finest view of the cement course, will be reached directly by special trains on the Long Island Railroad. A branch of this road runs directly from Long Island City to Garden City, which is about four miles west of the beginning of the course. Although the regular trains do not run below Garden City at present, the tracks are in good repair as far as Bethpage, which is the eastern terminus of the parkway, and the railroad company proposes to run sidetracks to the rear of the grandstand.

It may be possible for visitors to the race from a long distance to take a sleeping car at Long Island City on the night preceding the race and remain in it on the grandstand sidetracks until the racing cars are called to the line at daylight.

Never before have such complete arrangements been made for

the accommodation of visitors to an automobile race. There will be 11 miles of elegant parking space on either side of the cement way, under the control of the Cup Commission. Heavy steel wire fences will line the parkway from beginning to end, so it will be impossible for cars to pack at any particular spot. They will be admitted at the Whaleneck avenue entrance, which is the eastern entrance and beginning of the parkway, and lined single file, in accordance with the official parking space diagrams. These spaces, together with boxes and seats in the grandstand, may be obtained by application to Jefferson deMont Thompson, chairman of the Vanderbilt Cup Commission, at the offices of the American Automobile Association, 437 Fifth avenue.

Acme Six-Cylinder for Vanderbilt Cup.

Formal entry of a six-cylinder Acme has been made for the Vanderbilt Cup race. It is nominated by the Acme Motor Car Company, of Reading, Pa., and will carry the colors of one of the Pennsylvania clubs affiliated with the American Automobile



Trio of Packards Trying the Motor Parkway Curves.

Association. This company made its debut in the road racing game at the Savannah meet last March. Its car, which was also of the six-cylinder type, finished third in the big race for the Savannah cup, despite the fact that its pilot was inexperienced in the racing game and drove his machine on a rather conservative time schedule. Who will be its pilot over the Long Island course has not yet been determined, though negotiations are in progress with several racing drivers of repute.

The racer will have a six-cylinder motor with five-inch bore and five-inch stroke. It is conservatively rated 60-horsepower at 1,000 r.p.m., but has been tested to upwards of 1,800 r.p.m. The cylinders are cast singly, with valves on opposite sides. The wheelbase is 116 inches, and the wheels, front and rear, are 36 by 4 1-2 inches. The gasoline capacity will be about 40 gallons, and the tank will be directly back of the driver's seat. The car is so far advanced toward completion that much road testing of it is expected to be accomplished before the close of the present month.

Entries of two Locomobiles and two Thomas racers are indicated in the next few days.

PROPERLY TIMING MAKE-AND-BREAK IGNITERS

THERE is much more involved in the successful operation of the make-and-break ignition system than simply correct timing of the break and proper insulation of stationary electrodes. In addition to these primary requirements are the following: A—The contact must have a sufficiently long dwell

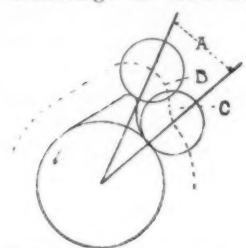
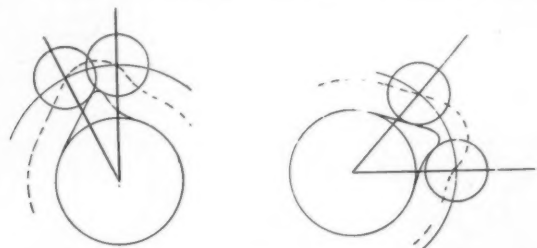


Fig. 1—Customary cam profile for low-tension ignition.

to permit the current to build up in the armature winding or the spark coil; B—The contact points, if of steel, must be reasonably clean and comparatively free from oil; C—The rocking electrode must not be worn so loose in its bearing that the moment of break or the certainty of good electrical contact can be affected by its wobbling; D—The adjustable rods or stems actuating the igniters must be true and free in the cupped ends of the outer rocking arms. Fig. 1 shows approximately the customary section of the igniter cam. It will be seen that both the lifting and the descending faces are angular. In other words, contrary to the common practice in marine and stationary engines, it is not what is known as a "snap" cam. The object of this is to permit the cam to turn backward in case of a back kick without damaging the mechanism and without the complication of a trip finger. The effect of this angular descent is to make the precise moment of rupture a matter of some importance, since the arc traveled by the crank during the roller's descent is double the arc A. As is evident from the



Figs. 2 and 3—Illustrating difference in endurance of contact of two cams.

dotted line indicating the path followed by the center of the roller, the movement of the roller is slow at the top of the cam, and consequently the spark produced if the break occurs, *e.g.*, with the center of the roller at B, is not as strong for the same flow of current as it would be with the roller C. Again, contact is made when the roller is at the same distance from the center of the cam as on the break, and the dwell in contact is therefore comparatively short in Fig. 2 and much greater in Fig. 3, as the angles shown in dotted lines indicate. It is easily possible for the dwell to be too short to produce an effective spark, and when a magneto is the source of current it is a safe rule that the electrodes shall make contact during at least the upper half of the cam's lift.

If the contact points are of iridio-platinum they will wear very slowly, and the spark time will be but slightly affected by their wear. If, however, the contacts are steel they will burn away rather rapidly. This has the effect of changing the position of the outer arm of the igniter as shown in Fig. 4, and both reduces the dwell and causes the break to occur earlier than before. The rate at which this progressive change in timing goes on will depend partly on whether the magneto or battery is used, being usually greater with the lat-

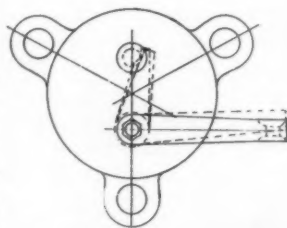


Fig. 4—Effect of wear on the time of the break.

ter, and on the area of the surfaces in contact, being obviously greater when the available surfaces are small. An insulated stem which has been in use for some time and has been turned repeatedly to bring fresh surfaces in contact assumes finally a form resembling that at A in Fig. 5, and the contact finger has probably acquired the shape shown at B in the same sketch. When this condition is reached, if the contacts are continued further in service, it is probably necessary to change the angle of the outer arm owing to the limit of the igniter rod's adjustment having been reached. This arm usually is a taper fit on the rocking stem, and a little careful trial will establish a suitable position for it. It is essential occasionally

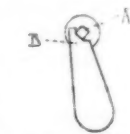


Fig. 5—How the contacts wear away.

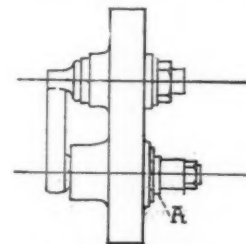


Fig. 6—Correcting a tendency to shake.

to file the contacts clean and smooth, and at more frequent intervals to polish them with emery cloth to remove the burned scale which forms on their surfaces.

In case the rocking stem wears loose and shows a tendency to wobble, it may be kept fairly steady by inserting a washer at the outer end of the bearing as at D in Fig. 6. It should be remembered that the wobbling tendency is chiefly promoted by the igniter rods themselves being crooked and bearing sidewise against the rocking arms. This has a further objection in that the friction of the rods against the arms on the first downward movement is more or less liable to cause a premature break. The rods should be guided entirely from below and should exert no pressure whatever against the igniter arms except in the vertical direction.

The synchronizing of igniters is most easily and accurately done with the aid of one or two cells of battery and a voltmeter. If the battery is part of the standard reserve equipment it is not necessary to make any change in the connections, except to break the connection from the switch to the bus bar and insert the voltmeter. Then the spark lever is fully retarded and the flywheel turned to one of the dead positions, which are usually marked on it. This position should be the breaking position for whichever igniter is in action at that instant.

While contact is established the voltmeter will indicate the fact, and the instant contact is broken the needle will return to zero. Adjust the igniter rod up or down until on two or three successive trials the break occurs at exactly the right point, and see that tightening the locknut on the igniter rod does not change this adjustment. Turn the crank again and watch carefully the movement of the igniter rod after contact is made. If it does not move up half its total travel after contact is made, take off the igniter plate, slacken the taper fit of the outer arm on the rocking stem, and turn the arm very slightly downward. Replace the igniter plate and readjust the igniter rod. When the first cylinder has been satisfactorily timed, take the second, and so on. It is best to cut out all the cylinders except the one under test.

If the advance and retard follow Mercedes lines, as in Fig. 7, it is possible that a back kick may have bent some of the arms A. This is tested by turning slowly and noting if all the rollers begin their ascent or descent at the same crank position. If not, they must be made to do so by bending the arms, A, otherwise the timing will be for one position of advance only.

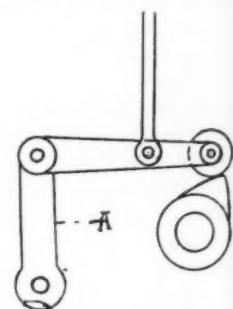


Fig. 7—Bent arms may cause loss of synchronism.

HOW THE CLUBS ARE DOING EFFECTIVE WORK

HARTFORD CLUB DOING GOOD SIGN WORK.

HARTFORD, CONN., Aug. 10.—One of the chief activities of the Automobile Club of Hartford at the present time is the sign-posting of the Connecticut roads in different parts of the State, so that the members of the sign post committee are now the busiest in the club. As is the case in a great many States, the roads in Connecticut came from nowhere and led to nowhere else until the local club undertook the work of putting up appropriate signs for the benefit of the visiting autoist, as well as the resident, for many of the latter could be lost on their own roads, so complete was the lack of information. The work will be continued until all the principal routes are posted.

Preparations are now under way for the hill climb to be held under the auspices of the Automobile Club of Springfield, September 11. C. H. Gillette, vice-president of the Automobile Club of Hartford, has been requested to act as referee and has consented to do so. It is confidently predicted that the hill climb will be one of the largest and most successful ever held in Connecticut, as all the famous climbers have promised their entries.

COUNCIL BLUFFS TO HAVE A CLUB.

COUNCIL BLUFFS, IA., July 31.—A meeting was held recently by a number of automobilists of this city to consider the formation of an automobile club, to be affiliated with the American Automobile Association. The organization would act in conjunction with similar bodies at Davenport and Mason City, Ia., to form a state association. The meeting was presided over by M. Woolman, president of a club formed here several years ago. Dr. T. B. Lacy, Dr. Jeffries and T. S. Davis were appointed a committee on organization.

HARRISBURG CLUB ERECTING SIGNS.

HARRISBURG, PA., Aug. 10.—The Motor Club of Harrisburg has recently appointed a special sign board committee consisting of J. Clyde Myton, James McCormick, Jr., and Dr. John Oenslager for the purpose of placing sign boards along all the important roads entering the capital city of Pennsylvania and especially mark the short route running from this city to Gettysburg. The club has appropriated \$150 for the sign board work and work has already been started.

The Motor Club will hold an economy contest over the asphalt streets of the city next Saturday to show just how much mileage can be secured on a gallon of gasoline from various cars in their daily use in the city. Later in the month a similar contest will be held over country roads to show the relative use of fuel between city streets and country roads.

GYMKHANA FOR ROCHESTER AUTO CLUB.

ROCHESTER, N. Y., Aug. 10.—The Rochester Automobile Club will hold its annual gymkhana at Genesee Valley Park Saturday, August 15. There will be twelve events, including the usual obstacle, potato and speed-judging races, and several new and original contests which are expected to provide much amusement. The club is extending its activities in many other directions as well. Tuesday, August 11, will be Orphans' Day, and 140 cars are expected to come out to give the city's charges a run to Ontario Beach. Road signs are being placed on the roads leading to Syracuse. Nearly fifty members have taken advantage of the club arrangements with the Canadian Custom House and are touring in that country. The total membership of the club is now 504, and it is still rapidly on the increase.



"Jersey Justice" as Depicted by "Motor Record," the Official Organ of the New Jersey Automobile and Motor Club.

CHAS. B. SHANKS, STEARNS' SALESMANAGER.

CLEVELAND, O., Aug. 10.—Charles B. Shanks has just been appointed salesmanager of the F. B. Stearns Company and will immediately enter upon the new duties of his office with the latter concern. He will still continue as the head of the Shanks Selling Company, the firm which he organized immediately upon severing his relations with the Winton company, and in addition to the Chalmers-Detroit line, which he took on for northern Ohio at that time, he will also sell the Stearns cars at retail in Cleveland and vicinity.



Charles B. Shanks.

For the last ten years Mr. Shanks has been the manager of the advertising and sales departments of the Winton Motor Carriage Company, of the same city, and during that time he has made himself one of the best known salesmanagers in the industry the country over.

The forcefulness and energy of his methods have accomplished much in the selling line, while his personal geniality has won him a host of friends, so that it is not at all strange that his stepping into the retail field came as a great surprise to all who knew him nor that other companies should immediately bid for his services. He has a fund of knowledge concerning the necessary ways and means for successfully marketing a factory's product that is possessed by few and which it seemed a pity not to give some enterprising company the benefit of.

As a result of this latest move the Shanks Selling Company, 1526 Euclid avenue, Cleveland, will be in charge of R. H. Williams, formerly manager of the Winton branch at Baltimore, and the company will handle the Stearns line at retail in connection with the Chalmers-Detroit. The cars do not conflict in any way, and the combination is regarded as an excellent one. As an assistant manager in the sales department of the Stearns Company, Mr. Shanks will have Hal Sheridan, who has been prominently connected with the White Company for a number of years past.

President Frank B. Stearns, of the Stearns Company, in discussing the new Stearns-Shanks combination, said: "We are very glad that changing conditions made it possible to take Mr. Shanks into our company and to turn over to him the disposal of our output. We have wanted him for a number of years, but his resignation from the Winton Company gave us the first chance we ever had to bid for him."

RENTING DEPARTMENTS PROVING VALUABLE.

Harry S. Houpt, of New York, has started a Thomas Flyer renting agency. Though run from the Harry S. Houpt Company's headquarters, it is a private enterprise of Mr. Houpt, who says he will start the service with five cars and will furnish neatly uniformed chauffeurs.

In this connection it is to be noted that not a few agencies maintain rental departments either directly or indirectly connected with their selling agencies. They not only furnish a profitable haven for shop-worn cars and cars taken in exchange, but make it conveniently possible to furnish temporary employment to chauffeurs, thus affording at all times trusted and competent pilots for purchasers and customers.

One prominent New York branch, which conducts a rental department under an independent name, turns over to it the exchange cars and charges their cost against their maintenance for a year. A car taken in exchange at \$1,500, for instance, would have \$125 per month charged against it for one year. Despite this conservative book-keeping, the department, besides the advantages it otherwise affords, yields a good profit.

DETROIT CONCERNS BUSILY OPTIMISTIC.

DETROIT, Mich., Aug. 10.—If any injurious effects from the recent industrial depression remain they are not in evidence among local automobile factories. Never before in the history of the industry have Detroit concerns faced a more favorable outlook than at the present time. From all quarters come optimistic reports, backed up by figures that do not exist solely on paper, but represent real money. The question now confronting makers is how to handle the business that is coming their way, with a rush unlooked for even by those who had planned most carefully. This may be accounted for in part by the introduction of several high-grade models at a lower price than hitherto prevailed, and the switch of one concern to the licensed ranks, bringing it in touch with agencies that open up a field that was not available under old conditions.

With one of the most spacious plants devoted to the production of automobiles, and with facilities that were supposed to be ample for all time, the Packard Motor Car Company has been forced to greatly increase the size of its factory, owing to inability to expeditiously handle the constantly growing demand. Two more concrete and brick additions are to be added at a total cost of \$100,000. They will give 150,000 square feet more floor space and enable the company to increase its working force from 2,500 to 3,000. Another building is also under consideration.

Things are humming at the Cadillac plant, where the new Cadillac "30" will soon be coming through in great numbers. At the Chalmers-Detroit plant conditions are similar, the new "30" keeping everybody on a jump, in addition to the present Chalmers-Detroit car which has proved so popular.

Still another "30" that is making things lively is the Everitt-Metzger-Flanders car, preparations for producing it in great numbers going forward rapidly. The Ford Motor Company is, of course, keeping up the pace that has made it famous. The Brush Runabout Company, the De Luxe, Aerocar and other plants are all in a prosperous condition and the sun once more shines on both sides of the street so far as local automobile makers are concerned.

DEATH OF CHARLES G. HUNTINGTON.

HARTFORD, CONN., Aug. 10.—Charles G. Huntington, for many years advertising manager of the Electric Vehicle Company, of Hartford, died at his home in this city on the morning of Saturday, August 8. He had been in poor health for the past few years, but remained at his desk until a year ago. Previous to his connection with the Electric Vehicle Company, he was advertising manager for the Pope Manufacturing Company, and before that was a teller with the Connecticut River Banking Company, and one of the editors of the *American Cyclist*. During the heyday of cycling he was prominently identified with League of American Wheelmen affairs in Connecticut, and was at one time chief consul of the Connecticut division. At this period of his career he compiled the first road book of Connecticut, which met with a wide sale.

Mr. Huntington always took an active interest in the city government and served on both the fire and the police commissions. He also did very efficient work on the school district commission. In politics he was a Democrat. He was of a genial disposition and of the sort that readily made friends, and in the old days at the Electric Vehicle Company "C. G." as he was familiarly called, was the soul of many a gathering. He had a wide acquaintance with the advertising men, who hold him in the highest esteem. During the past two years of his life he suffered much, but even this was not sufficient to dim his sunny disposition. His was a nature that will be missed for a long time to come, and in his death the industry loses a familiar figure. He was a member of Hartford Lodge, F. A. M.

A. L. A. M. ADOPTS STANDARD DETACHABLE RIM.

ACTION on various matters of importance was taken by the Association of Licensed Automobile Manufacturers at its general meeting held in New York, August 6. It embraced the election of a successor to H. H. Franklin, whose resignation as treasurer was tendered after three years of service and accepted. Col. George Pope was unanimously chosen to fill the vacancy.

After many months of negotiation by the rim and tire committee, a quick detachable rim was at last adopted on its recommendation. It will be known as the "Standard universal quick detachable," and is the same rim as was under discussion at the N. A. A. M. meeting the previous day and pronounced satisfactory. The Mechanical Branch of the Licensed Association has been working on the rim situation for the past year and felt the need, both for the individual users and automobile manufacturers, of a standard quick detachable rim, which would take both a clincher and quick detachable shoe of any make, thus minimizing the existing inconvenience of having to have a shoe of one make to fit a given rim. After experimenting with all the quick detachable rims, co-operation with the tire and rim makers resulted in the adoption of this rim, which is the result of hard and persistent efforts on the part of the tire and rim makers to get something that would be adopted by all manufacturers, both in and out of the association.

M. J. Budlong and R. D. Chapin were added to the rim and tire committee, whose chairman is A. L. Pope.

The report of the show committee was approved. Accordingly at the next general meeting, which is likely to be held early in September, awards for space for the Madison Square Garden show will be made. It was recommended that the usual method of allotment be adopted, which is according to the amount of business done from July 1, 1907, to July 1, 1908 by the various bidders for space.

The report of the handbook committee was accepted, and work on the 1909 handbook will begin at once, as several of the members have already forwarded photographs and specifications for the sixth edition of this book.

Those present were: M. I. Brock, Autocar Company; W. C. Durant, Buick Motor Company; W. C. Leland, Cadillac Motor Car Company; R. D. Chapin, Chalmers-Detroit Motor Company; M. S. Hart, Corbin Motor Vehicle Corporation; E. R. Hewitt, Hewitt Motor Company; A. N. Mayo, Knox Automobile Company; S. T. Davis, Jr., Locomobile Company of America; V. M. Gunderson and W. E. Metzger, Northern Motor Car Company; F. L. Smith, Olds Motor Works; M. J. Budlong, Packard Motor Car Company; L. H. Kittridge, Peerless Motor Car Company; Charles Clifton, George N. Pierce Company; George Pope, Pope Manufacturing Company; G. E. Mitchell, Alden Sampson, R. H. Salmons, Selden Motor Vehicle Company; F. B. Stearns, F. B. Stearns Company; I. H. Page, Stevens-Duryea Company; A. W. Church and O. G. Bechtel, Waltham Manufacturing Company, and Thomas Henderson, Winton Motor Carriage Company.

INTERPRETING THE OHIO LAW.

TOLEDO, O., Aug. 10.—The attorney-general's office of the State of Ohio has just rendered a decision under the Ward automobile law which will greatly increase the revenues derived under that act, to say nothing of causing corporations to secure chauffeur licenses for all of its employees who run any automobiles or autotrucks such corporation may have. The Ward law provides that an owner of a machine may run it without a license, but in its opinion the attorney-general's office holds that because one owns stock in a corporation, he is not an owner of any automobiles said corporation may own, and to run such automobile the driver must have a license; the same law covering any employees whose duties may be to run such machines or trucks.

STUDEBAKER AND E.-M.-F. SALES COMBINATION.

SOUTH BEND, IND., Aug. 10.—The latest combination in the American automobile industry is that of the sales departments of the Everitt-Metzger-Flanders Company, of Detroit, and the Studebaker Automobile Company, whose factories are located in this city. In other words, William E. Metzger and Hayden Eames, manager of the Studebaker Company, will co-operate in marketing the proposed output of 12,000 E.-M.-F. cars, the American territory being divided between them. The Studebaker concern has contracted to sell 6,000 of the E.-M.-F. cars through its large and effective sales organization, comprising eight branch houses and fully 5,000 retail dealers, and will have exclusive control of the foreign business, its export interests being very large in all parts of the globe.

"We are highly pleased at its consummation and frankly believe it will prove to be the most important move that has been made in the automobile business," said Colonel George M. Studebaker, when asked to verify the report. "We considered it more advantageous to us to form an alliance with a group of men such as that comprising the Everitt-Metzger-Flanders Company, possessing as they do factory facilities, experience and manufacturing ability of a rare order, as well as an intimate knowledge of the problems peculiar to the motor car, than to establish a separate factory of our own.

"It has long been our intention to go into the marketing of cars on a large scale. The chief factors which have deterred us until now were: First, the unsettled state of the market; second, the expensive and wasteful sales methods, which, in our opinion, made the business an unsafe one, and, last but not least, the lack of stability in design which rendered the making of a large number of cars of any one type a risky business. These conditions having changed, we decided the time was ripe. The Studebaker sales department and the E.-M.-F. manufacturing organization should prove a strong combination.

BRUSH RUNABOUTS' TRIUMPHAL PROGRESS.

With the sole purpose of demonstrating that the lowest-priced automobile on the American market to-day is likewise an economical and practical motor vehicle, the Brush Runabout Company, Detroit, Mich., started four of their new Model B runabouts, selling at \$550, and one of their little 500-pound delivery wagons, listing at \$600, from that city on August 1, on what they term "a 1,500-mile efficiency run." The cars were all dispatched at the same time, leaving the factory on a Saturday afternoon, and each striking out on a different course. Car No. 1 is bound for New York and Boston, and successfully reached the headquarters of the Brush-McLaren Company, 47 William street, Newark, N. J., last Tuesday. It remained in that city for a few days in order to demonstrate its fitness after the long run to a number of interested autoists, and then proceeded into New York, where the same procedure was gone through. Following this, it again struck out on the last leg of its journey to Boston, which will be reached some time next week, as the cars are all proceeding by roundabout routes in order to be able to make demonstrations in as many cities along the way as possible.

Of the others that left Detroit at the same time on similar missions bound, car No. 1 is on its way to Philadelphia and Washington, while car No. 2 is well along on the trip to Kansas City, Mo. It will not stay there as the end of its journey, but will continue on to Denver and take a try at Pike's Peak. Car No. 4 is bound for Minneapolis, while the delivery wagon, which is Brush car No. 6, will make the round trip between Milwaukee and Detroit. Deducting the time necessary for demonstrations, the cars have been averaging 80 to 100 miles a day without any difficulty, and, in every case, are ahead of the schedule mapped out for them by the Brush company before leaving the factory.



Garage of the Keystone Motor Car Company, Oakland, Cal.

San Francisco, Cal.—The new garage of the Jerome Garage Company recently opened at Polk and Jackson streets is unique in that no sales whatever are made there, the building being devoted entirely to the care of cars. It occupies nearly a quarter of a block, having on its three floors a space of 65,000 square feet. About 200 cars can be accommodated. On the second floor is a handsomely fitted up club room for chauffeurs, and also the machine shop, which is so completely equipped that it is believed an entire car could be built there without the addition of another tool. On each floor there are two turntables and two elevators convey cars from floor to floor. The establishment is in charge of Manager Eugene Silver, until recently with the McDuffee Automobile Company, of Chicago.

Cincinnati, O.—The garage built last winter by the Reliance Motor Car Company has been acquired by the Herschede brothers, who have incorporated and are continuing the business of the other concern. The building is situated in Avondale at Reading road and Maple avenue, with a 107-foot front on the former and 180 feet on the latter. The situation is very favorable, being on the usual route out from the city and in one of the best residential districts. The main floor has a capacity of about 75 cars; in the rear is a well-equipped machine shop, and in front the office, waiting room, salesroom and a small shop for drivers who wish to do their own repairing. The company will carry the agencies for several American and foreign cars.

Syracuse, N. Y.—The Utica Motor Car Company has purchased the garage of the Genesee Automobile Company at 242-252 West Genesee street, in this city, and will continue the business under its own management. The garage has a frontage of 63 feet on West Genesee street and extends back 84 feet on Franklin street; it contains ample display space, machine shops, etc., with a lounging room for chauffeurs in the basement. The company has the agency for the Peerless, Pope-Hartford and Cadillac.

Chicago, Ill.—The Rambler Garage Company, of Chicago, will erect at 1218 Sheridan road a 45-foot addition to the present garage, which already has a 100-foot frontage. The building will be three stories high and will cost approximately \$20,000. The business of the Rambler Garage Company has increased to such an extent owing to the growing number of automobile owners on the north side of Chicago that it far exceeded the capacity of the present quarters.

Pasadena, Cal.—A novelty in garages is that of the Electric Garage Company, at 100 East Union street, which is devoted exclusively to electric vehicles. The building is of reinforced concrete and brick, with a floor space, including a fireproof basement, of 14,400 square feet. Pasadena has as many, if not more, electric than gasoline cars, and that means a good many, as it is said to have more automobiles in proportion to its population than any city in the United States.

Oakland, Cal.—The Keystone Motor Car Company's garage at Telegraph avenue and Twenty-second street in this city is one of the handsomest on the Pacific Coast. It was erected at a cost of \$12,000, and D. C. McCord is the manager. There is

a floor space of 16,000 square feet and in the well-equipped workshop six men are employed. The company is agent for the Acme, Marion and Overland.

Richmond, Va.—About September 1 the Gordon Motor Company expects to occupy its new garage, now being erected, which will be the largest and best equipped in this part of the country. The building is located on West Broad street, opposite the ball park, and will cover every foot of space on its 84 by 120-foot lot. Besides its garage business the company will have the agency for several gasoline automobiles.

Portland, Ore.—One of the most substantial and best-equipped fireproof garages in the Northwest is now the home of the Oregon Motor Car Company, R. E. Heath, manager. It is one story high, of brick and cement construction. The company makes the agency business its specialty, handling the Tourist and the Moon, and the garage is intended to take care of the company's patrons only.

Augusta, Ga.—The Augusta Motor Company is now occupying its new garage at 712 Ellis street, and will do a general garage, agency and repair business. L. M. Coward, an experienced automobile man, holds the position of general manager, and has under him several expert repair men direct from the factories. The company has the agency for the Reo, Premier and White steamer.

Kansas City, Mo.—Ground has been broken for the erection of a new garage for the Studebaker Company, to be located on Grand avenue, near Seventeenth street. Until the new building is completed the company will make its headquarters in the former home of the Auto Motor Company, at 1122-24 East Fifteenth street.

St. Paul, Minn.—The St. Paul Motor Vehicle Company has what they claim to be the finest garage in the Twin Cities. It has a frontage of 87 feet and a depth of 168 feet, of concrete construction, and up-to-date in every particular. The company has the agency for the Oldsmobile, Buick and Columbia Electric.

Washington, Pa.—Another garage has been opened in this city by Howard H. Tanner and Fred C. Berthel, the firm to be known as the Standard Auto Company. The garage is located at 29 East Wheeling street, where considerable remodeling is being done.

Lincoln, Neb.—The Nebraska Automobile and Storage Company is opening the largest garage in the State at 1226 N street, where they will handle the Chalmers-Detroit. They will carry a general line of supplies and do a renting and storage business.

Burlington, Vt.—The automobile department of the Burlington Machine and Repair Company has been separately organized under the name of the Burlington Garage Company, which will occupy new brick quarters on Mechanics street.

Little Rock, Ark.—A new garage is being planned by W. L. Tedford and some associates. It will probably be built of concrete blocks, 40x60 feet, on East Fourth street. The demand is believed sufficient to justify the investment.

Newark, N. J.—William Bowden is erecting a garage at 401 Clinton avenue. Mr. Bowden does not intend to represent any machine, for the present at least, but will simply do a general storage and garage business.

Joliet, Ill.—A new garage, possessing all the advantages of location and equipment, was recently opened by L. J. Kinnel at 102 West Jefferson street in this city. Mr. Kinnel is the Joliet agent for the Mitchell.

Atlanta, Ga.—The new Atlanta home of the Maxwell at 34 Auburn avenue has just been opened. The new building is of brick, one story high, and of adequate size to handle the company's growing business.

York, Pa.—John Oden is the manager of a new garage in this city. The building has a frontage of 34 feet on Philadelphia street, and a depth of 58 feet, and is thoroughly up-to-date.



Packard Testers Using Embankments of Michigan State Rifle Range, near Detroit.

Packard's Novel Testing Ground.

The testing corps of the Packard Motor Car Company, always on the lookout for new hills to conquer and to use in the regular testing of Packard cars, recently discovered and obtained the privilege of driving on the embankments of the new Michigan State Rifle Ranges, near Detroit. These embankments, or butts, as they are called in military parlance, are clay and gravel hills, 40 feet high, with stiff grades, the steepest of which is 45 per cent. They form an ideal hill-climbing test under ordinary rough road conditions. The construction company men, and afterwards the United States troops using the ranges, were much interested in the way in which a dozen cars at a time were driven over the hills, some from one side and some from the other. The Packard testers are now busy on 1909 cars, of which approximately one hundred have already been delivered to purchasers. The factory is running a full force of 2,500 men and this is being increased each week. When two additions now under construction are completed, the number of employees will be larger by several hundred.

Diamond Tires Around the World.—The Diamond Rubber Company, Akron, O., on the completion of the round-the-world race, received the following telegram from the E. R. Thomas Motor Company, of Buffalo, N. Y.: "In New York to Paris race not only an American car but also American tires scored important triumph. Diamond quick detachable tires on the Thomas car gave excellent service. Not only did the casings withstand hard usage to an almost incredible degree, but the tubes of the same make showed equally good results. At no time was the Thomas seriously delayed by tire trouble, and it is safe to say that every known species of road in the world was encountered save those of the tropics."

"Wag" Comes a Cropper.—Fred J. Wagner was unavoidably detained from business on Monday last through being mixed up in a little auto accident of his own. He was out in his car Sunday with his son, Fred J., Jr., in the driver's seat, and his wife in the tonneau. While making good time along Jerome avenue, New York, young "Wag" was seized with vertigo and fainted. The car swerved and ran into a telephone pole, throwing all three out. "Wag" sustained a cut on his leg, which required several stitches; Mrs.

Wagner was cut about the mouth, and Fred, Jr., was a bit bruised.

Pullman Increases Capacity.—The York Motor Car Company, of York, Pa., makers of the Pullman cars, have made changes in their plant which will more than double its capacity. The main building had, until the present time, been divided between the production of carriages and automobiles, but the growth of the latter business made it necessary to move the carriage plant away, and the whole building is now devoted to the making of autos.

Trade's Summer Capital in Maine.—Christmas Cove, Me., has some excuse this summer for putting on airs as a bit of an automobile trade summer capital, since it will harbor for several weeks to come S. A. Miles and Alfred Reeves, respectively, general managers of the N. A. A. M. and the A. M. C. M. A., and Robert Garden, manager of the Harrolds Motor Car Company, New York agents for the Pierce.

New Body Builders.—The Fischer Body Company has purchased the plant of the Gier planing mill on St. Antoine street, Detroit, Mich., and will commence operations there at once. A two-story building, 250x50 feet, will be erected for use as a mill room and dry kiln. The new company is capitalized at \$50,000, and will engage in the manufacture of automobile bodies.

Webb Jay Steamer Appears.—Webb Jay appeared on the Chicago automobile row a few days ago at the wheel of a 1909 Webb Jay steamer, which looked good to many of the experts. He has disposed of his entire allotment of Stanley steamers and Kisselkars, and will devote much of his time to the interests of his new production.

Gun Makers in Line.—The Driggs-Seabury Ordnance Corporation, of Sharon, Pa., has decided to go into the manufacture of automobile parts, especially pressed steel work. Ground will soon be broken for a \$50,000 addition to the present plant, to be devoted to this branch of the business. Employment will be given to about 75 skilled men.

Franklin "Farthest North."—A party from Conneaut, O., recently made a run to their summer home at Dorset, Ont., in a Franklin automobile, penetrating far into the Canadian forests. The last part of the journey was made over mere tracks in the woods, through country never before traversed by an automobile.

Atlas Builds Addition.—The Atlas Motor Car Company, of Springfield, Mass., has just let the contract for the erection of a new building 150x50 feet, three stories in height, which is to be completed by October 1. Considerable new machinery will be installed.

Packard Addition Progressing.—Work is progressing rapidly on the addition to the Packard Motor Car Company's plant at Detroit, Mich. When the new buildings are completed they will give the factory an additional area of 150,000 square feet.

IN AND ABOUT THE AGENCIES.

Cork Inserts.—The Standard Brake Company, formerly of 101 West Sixty-sixth street, New York, which has for several years assisted the National Brake and Clutch Company in negotiating licenses with automobile manufacturers to use cork inserts for automobile purposes, has retired from business owing to death and changes in the personnel of the company, and all further communications regarding the use of cork inserts in clutches, brakes or pulleys should be sent to the patentee, the National Brake and Clutch Company, 16 State street, Boston.

Winton.—Owing to the development of Winton trade in Minnesota since Johnny Johnson took charge last spring rendered the temporary quarters altogether inadequate and forced the company to look about for a new situation, with the result that the Minneapolis branch will soon be housed in its new building on Eighth street north, near Hennepin avenue.

Gyroscope.—A. L. Kull has just occupied a four-story brick building on Fifty-fourth street, west of Broadway, and will make it the New York headquarters of the Gyroscope Automobile Company.

Thomas.—Announcement has been made that the Walden W. Shaw Company has relinquished the Buffalo, N. Y., agency of the Reo and Premier and taken on the Thomas Flyer.

Warner Autometer.—W. H. Halliwell, who has the Los Angeles agency for the Warner Autometer Company, is making preparations to establish a branch in San Francisco.

Chalmers-Detroit.—Frank J. Fanning, formerly of the Chicago firm of Levy and Fanning, has been appointed agent for the Chalmers-Detroit in Indianapolis, Ind.

Pierce-Arrow.—The Foss-Hughes Motorcar Company, which has the agency for the Pierce-Arrow in Philadelphia, is preparing to open a branch in Baltimore.

Pope-Hartford.—The Crescent Auto Company, of Jersey City, N. J., has been appointed agent for the Pope-Hartford in northern New Jersey.

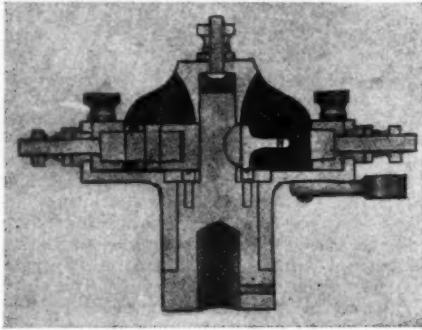
PERSONAL TRADE MENTION.

L. A. Hopkins, for some time past manager of the St. Louis Car Automobile Company of New York, which is the metropolitan branch of the St. Louis Car Company, builders of the American Mors, has severed his connection with that concern, his resignation having taken effect at once.

C. H. Gage, who for several years past has been the manager of the Cleveland branch of the Fisk Rubber Company, has been promoted to the assistant sales-managership of that company, and left yesterday to take up his new duties at the factory at Chicopee Falls, Mass. Mr. Gage is succeeded in Cleveland by C. H. Collins, formerly manager of the Denver branch.

INFORMATION FOR AUTO USERS

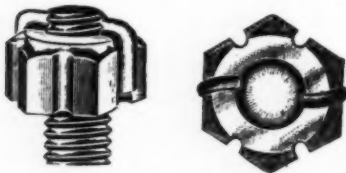
Roberts Timers.—That well-known firm of electrical instrument makers for automobile use, the Roberts Instrument Company, 56 Shelby street, Detroit, Mich., has recently placed on the market a line of timers for both marine and automobile service. The instrument is simple and re-



SECTIONAL VIEW OF ROBERTS TIMER.

liable, besides being very well built, solid brass being employed for the case while the bearings are of the finest steel. This, together with the extra length and bearing surface of the shaft sleeve, insures permanent alignment and makes the timer very durable. The illustration shows a sectional view of the Roberts timer, from which an idea of its simplicity and the small number of parts necessary may be gained. The timer is designed to operate clockwise, but should the requirements of the case make this out of the question, it is easy to reverse its direction of rotation merely by removing the brush and inserting it so that it will run in the opposite direction. This makes it adaptable to any motor without any trouble. For automobile use it is made in two sizes, three and four inch, the latter being intended for the heaviest service, while the smaller one is intended for light cars. The marine timer is equipped with quadrant and lever as well as a ground wire attachment.

Victor Lock Nut.—One of the chief causes of trouble on automobiles of earlier days was the constant loss of parts, small in themselves, but often of vital importance to the machine, which loosened up and dropped off owing to the constant vibration and shaking. To remedy this source of difficulty, innumerable methods have been devised of locking nuts and bolts in place but many of them have fallen far short of accomplishing the purpose for which they were devised. Realizing the

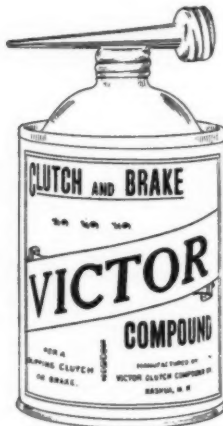


VICTOR LOCK NUT AND ITS FASTENING.

shortcomings of many of the lock nuts on the market, the Walker Brothers Company, 21-25 Walton street, Syracuse, N. Y., brought out the Victor lock, two views of which are shown by the accompanying illustrations. Among its advantages, the makers cite the following: "It is a positive lock between the bolt and the nut; it is locked easier than a castled nut; has possibilities of adjustment possessed by no other positive lock nut as it is locked after

the nut is home in its place; it can be unlocked, adjusted and relocked without removing, and it can be removed without injury to the lock or bolt; it is a time saver in assembling and can be manufactured at less cost than any similar positive lock." As shown by the cuts, it does not depend upon a spring or compression for its action, nor is an extra nut necessary. When in use there are no protruding prongs and no cotter pins sticking out.

Victor Clutch Compound.—Very often an apparent loss of power that the motor is apparently responsible for may be traced to a slipping clutch, and there are few things more aggravating than to have the car slow down on hills or where the going is hard, merely because the clutch fails to transmit the power to the rear wheels. Everything imaginable has been tried by autoists to overcome this tendency, but few of the substances employed have the desired effect for any length of time, or tend to improve the condition of the leather facing of the



VICTOR CLUTCH AND BRAKE COMPOUND.

clutch. An expert repair man, after considerable experimenting, discovered a compound which would do the work, and after having put it to hundreds of tests it has been put on the market as the Victor clutch compound and is being manufactured by the Victor Clutch Compound Company, Nashua, N. H. It has proved its merits for this purpose conclusively and is also well adapted for other uses where friction surfaces come together, as in brakes, motorcycle belts and the like. It is put up in oiler top cans and being a liquid is convenient to apply exactly where it is wanted.

Dayton Airless Tire.—As its title indicates, this is a tire designed to do away with the use of compressed air, and accordingly to eliminate the numerous worries and troubles attendant upon the use of the pneumatic. So far as its external appearance is concerned it closely resembles the ordinary pneumatic, but there the similarity ends. Instead of the usual air tube, there are a number of columns of rubber, made of different strengths and thicknesses and placed at different intervals in proportion to the weight of the car the tire is designed for. The tire is built over a steel core or mold, and all cured in one operation, hence there is no danger of the columns separating from the outside walls, as they are integral with the outer covering. When the tire is taken off the form it is ready for use. In order to prevent

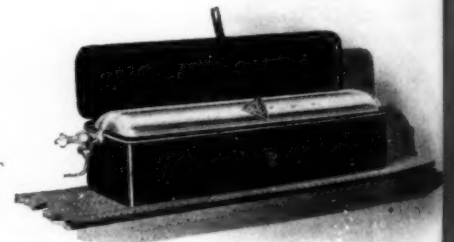
sagging or depression between these reinforcing columns and to further strengthen the tire, the fabric is brought down and caused to form a continuous rib. The Dayton Airless tire is the product of the Dayton Rubber Manufacturing Company,

Dayton, O., and tests made for the manufacturers by C. F. Adamson, M.E., show that the resiliency of the Dayton Airless Tire is on a par with that of the pneumatic, with the exception instead of compressed air being displaced rubber is displaced and, as in a standard 34 by 4-inch tire, there is 11-2 inches between the columns, there is plenty of room for expansion and the absorption of obstacles met with, exactly the same as occurs in the pneumatic tire. The principle is the same except that the action is mechanical instead of pneumatic. The many users who have tried the Dayton Airless tires are enthusiastic in their praise as shown by a number of testimonials printed by the makers, and it has been shown that these tires have run 20,000 miles without repair and are still in good shape. They may be retreaded in exactly the same manner as a pneumatic, making them good for another lengthy period of service, in fact, until the tread is entirely worn out.



DAYTON AIRLESS TIRE.

Autogas Tank Box.—It certainly seems strange that in the great improvement that has been brought about in the appearance of a car, no one has thought of providing the compressed acetylene gas tank with a cover that would be ornamental as well as affording it protection. The Avery Portable Lighting Company, Mil-

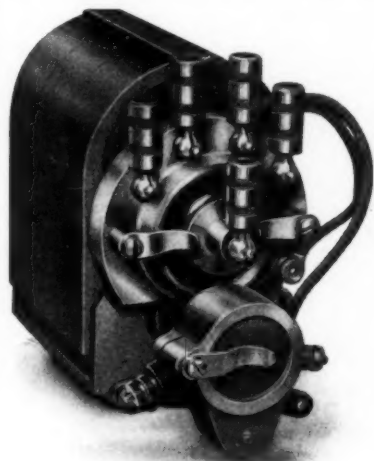


AUTOGAS TANK BOX AND CONTENTS.

waukee, Wis., has just brought out something of this kind, which they term the "Autogas tank box." It is made of pressed steel finely finished in enamel, so that when applied to the running board, it not only harmonizes with the other fittings of the car, but also serves to protect the tank from corrosion, as well as holding it securely. Recesses are cut at one end of the box to accommodate the gas outlet, while at the other an opening reveals the pressure gauge. No straps or other fastenings are necessary. By opening the lid of the box the tank may be lifted out and a new one inserted.

Remy High-tension Magneto, Type L.

—This is a new type of magneto recently placed on the market by the Remy Electric Company, Anderson, Ind., and it has already met with a very large demand on the part of manufacturers of light and medium powered cars. It is designed with a stationary winding which greatly simplifies construction and eliminates moving contacts in the primary circuit, an objectionable feature that is responsible for a very large percentage of all the trouble caused by the ordinary type. This winding consists of a simple coil of No. 18 B. & S. magnet wire embedded in the pole pieces of the magneto, the rotor, or inductor, consisting of a simple forging mounted on a solid steel shaft. At each half turn of this rotor the direction of flow of the lines of magnetic force is alternately reversed, inducing in the coil two electrical impulses, or current waves, for each revolution. The magneto winding is direct connected through the magneto circuit breaker with the primary of the spark coil used in the magneto. The current wave lasts through fully 45 degrees of the rotor's revolution, during which time the circuit is mechani-

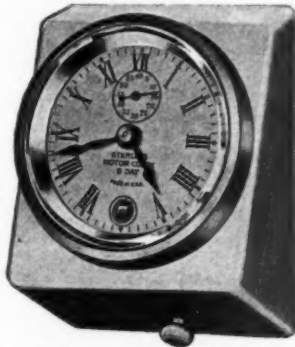


REMY HIGH-TENSION MAGNETO, TYPE L.

cally broken. Timing is accomplished by shifting the circuit breaker round the armature shaft, to which is attached the circuit breaker cam, and owing to the nature of the current wave, which is an abrupt rise and fall, a long timing range is afforded at practically the same current value. The distributor is geared so as to deliver a spark to each cylinder of a four-cylinder motor during two complete revolutions of the crankshaft. So that the magneto is geared to run twice as fast as the camshaft. In the case of six-cylinder, four-cycle motors, the magneto is back geared in the ratio of one to three, so that it runs three times as fast as the camshaft, or one and a half times as fast as the crankshaft. With the two-cylinder, horizontal-opposed type of four-cycle motor, there is no distributor necessary, a single cam being furnished, thus causing but one electrical impulse per revolution of the inductor, and the magneto is run at the same speed as the motor. The special spark coil furnished with the magneto is fitted with a two-point switch, so that either the battery or magneto may be used, or to disconnect from either to stop the motor. It is also provided with a push button so that either a four or six-cylinder motor may be started from the seat with the lever on the battery side. The batteries are only employed for starting, the current being sent through the coil and distributor of the

magneto, although the latter proves very reliable for starting, so that the real function of the battery is to act as an emergency relay, for which purpose it is primarily adopted in this outfit.

Sterling Motor Clock.—This is one of the scores of specialties pushed by the Post & Lester Company, Hartford, Conn., and is being offered as something radical in



A POST & LESTER CLOCK LEADER.

clocks selling at a moderate price. The mechanism is of the eight-day type, and is enclosed in a heavy brass offset case, the latter measuring 3 1/2 inches across, while it is 4 inches high vertically, measured across the back, or place where it is designed to be attached to the dash, while its depth at the lower part is 2 3/4 inches. The silvered dial measures 3 1/4 inches in diameter, and is protected by a heavy beveled crystal which screws over it. As the winding aperture is under the crystal, the entire mechanism is well protected against dust, mud or rain. An ingenious attaching device is provided which makes it impossible for anyone not in possession of the key to remove the clock from the dash. A good idea of its appearance may be obtained from the accompanying illustration.

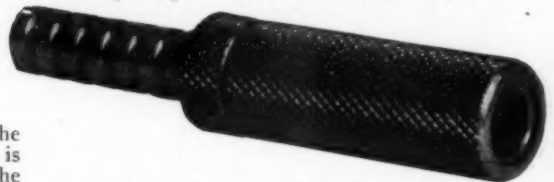
The Emergency Wheel.—This is the product of the Black Manufacturing Company, 118-120 West Wayne Street, Fort Wayne, Ind., the New York sales agents being Keeny & Mason, Broadway, Fifty-seventh and Fifty-eighth streets, in the Thoroughfare Building. It consists of a substantial steel rim with two stationary clamps and two adjustable clamps, the former being placed over the regular rim,



EMERGENCY WHEEL AS USED ON A CAR.

the car then being pushed forward, causing the adjustable clamps to take hold also. It is then only necessary to tighten two thumb screws, and as the latter are beveled sufficient leverage is obtained to make it easy to tighten them without the use of a wrench or other tool, and they will not jar loose. As will be apparent from the accompanying photograph showing the Emergency wheel in service, the device is very simple and substantial and saves the trouble of removing the old tire which has suffered damage, as well as the annoyance of having to inflate the new one. It is made in sizes ranging from 28 by 3 inches up to 36 by 5 inches.

Warner Tire Valve.—The Warner Instrument Company, Beloit, Wis., makers of the Warner Auto-Meter, have just placed on the market an automatic air valve which should do much to allay the autoist's inflation troubles. It is an extremely simple little device and the makers



THE NEW WARNER TIRE VALVE.

claim that with its aid it is possible to fill a four-inch tire to the proper pressure in fifteen seconds. It is automatic and positive in action, closing and opening instantaneously, and as it is free from springs and other small parts it is not liable to derangement. By simply pressing it against the valve on the tire the outlet is opened and a second valve nearer the tube is automatically closed, completely preventing the slightest leakage when not in use. The greater the pressure the tighter the valve will hold.

The 3 in 1 Tire Valve Tool.—The three parts from which this device gets its name are a slotted end to remove the valve "inside," a die to run over worn or



THREE-IN-ONE TIRE VALVE TOOL.

burred threads on the outside of the valve stem, and a tap to clean out the threads on the inside. It is handled by the Auto Novelty and Supply Company, Providence, R. I.

Innerseal Puncture Repair.—This is something radically different from the usual substances that have been placed on the market hitherto for the purpose of repairing a puncture in a tire from the inside, in that it does not consist of a liquid preparation of any kind, nor is it merely a shoe or similar device. The makers guarantee it not to loosen plugs in bicycle tires, also that it does not prevent vulcanizing the repair subsequently, that it will not injure the rubber and that it will positively mend any reasonable sized puncture. It takes the form of a silver flake and is made and marketed by the Innerseal Manufacturing Company, 321 Frankfort avenue, N. W., Cleveland, O. It is covered by patents.

